Markham's Farewel to

HUSBANDRY:

OR,

The Enriching of all ſorts of Barren and Sterile Grounds in our Nation, to be as Fruitful in all manner of Grain, Pulſe, and Graſs, as the beſt Grounds whatſoever.

Together with the Annoyances and Preſervation of all Grain and Seed, from one year to many years.

As alſo a Husbandly computation of Men and Cattels daily Labours, their Expences, Charges, and utmoſt profits.

Now newly the Tenth time reviſ'd, corrected and amended, together with many new Additions, and cheap Experiments.

For the bettering of Arable Paſture, and Woody Grounds: Of making good all Grounds again. ſpoiled with over-flowing of Salt water by Sea breaches; as alſo the enriching of the Hop-Garden. And many other things never publiſhed before.

By *G. Markham.*

LONDON,

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HUSBANDRY.

To the RIGHT WORSHIPFUL

AND

His moſt Worthy FRIEND,

BONHAM NORTON, Eſq;

Worthy Sir,

KNowledge, which is the divine mother of certain Goodneſs, never came unwelcome to a knowing Judgment; no more, I hope, ſhall this my labour to your worthy Self, ſince doubtleſs you ſhall find in it many things neceſſary, and nothing which hath not in it ſome particular touch of profit: It is a work your former incouragements to my other labours did create in me, and the wants you worthily found, I hope ſhall bring you ſup-

plies both wholesome and becomming. The experience, I assure your goodness, was the expence of a bitter and tedious Winter; but the contentment (in gaining my wish) made it more pleasant then all the three other Seasons. What ever it be, it comes to you full of love, full of service. And since I know Virtue measureth all things by its own goodness; it is enough to me, that I know you are that Virtue. In you is power to judge, in you is Authority to exercise Mercy; let them both flye from your goodness with that mildness, that in them my hopes may be crowned, and myself rest ever at your service.

GERVASE MARKHAM.

The

The Preface to the *Reader.*

Shewing the uſe, profit, and truth of the Work.

THe uſe and application of this Work, (gentle Reader,) is to reduce the Hard, Barren, and Sterile Grounds, ſuch as were never fruitfull, or ſuch as have been fruitfull, and are made barren by ill Husbandry, to be generally as fruitfull as any ground whatſoever; from whence ſhall enſue theſe general profits.

Firſt, Plenty of Corn and Pulſe; becauſe all grounds being made able and apt for Tillage, the Kingdome may afford to ſowe for one buſhell that is now, hereafter five hundred, ſo mighty great are the unfruitfull waſts of Heaths, Downes, Mores, and ſuch like, which at this day lye unprofitable; and to this abundance of Corn will ariſe an equall abundance of Graſs and Paſture: for as the beſt ground of the worſt is to be converted to Paſture, and the worſt to Tillage; ſo that worſt being tilled and dreſt, when it hath done bearing of Corn, (which will be in ſix or ſeven years) ſhall for as many years more bear as good Paſture either for breeding or feeding as can be required, and then being newly dreſt again, ſhall newly flouriſh in its firſt profit.

Secondly, whereas in fruitfull places, the third or fourth part of all arable ground is loſt in the fallow or tilth ground, now in theſe barren grounds, you ſhall keep no fallow field at all, but all ſhall bear either Corn or Graſs; that fallow part ſerving to pay for the charge beſtowed on it, and the reſt.

Laſtly, whereas in fertile grounds you cannot have either Wheat, Barley, or Rye, under two, three, four, five, and

ſix

ſix ſeverall plowings, as fallowing in January *and* February, *Stirring in* April *and* May, *Soiling in* July *and* Auguſt, *Winter-ridging in* October *and* November, *and Sowing, with other Ardors; now in theſe hard grounds reſtored, you ſhall not plow above twice at the moſt, to the ſaving of the Husbandmans pains, his Cattels travell, and a larger limitation of time for other neceſſary buſineſſes.*

For the truth of the Work, he that will ride into the barren parts of Devonſhire *or* Cornwall, *into the Mountainous parts of* Wales, *into the hard parts of* Middleſex, *or* Darbyſhire, *or into the cold parts of* Northumberland, Cumberland, Weſtmerland, Lancaſhire, *or* Cheſhire; *ſhall find, where induſtry is uſed, a full ſatisfaction for all that is here written.*

Farewell.

Thine, G. M.

MARKHAM

HIS Farewel to Husbandry.

CHAP. I.

The Nature of Grounds in general; But particularly of the barren and steril earth.

TO come to the full effect of my purpose, without any preambulation, or satisfaction to the curious, (for to the honestly vertuous are all mine endeavours directed) you shall understand that it is meet, that every Husbandman be skilful in the true knowledge of the nature of grounds; as, which is fruitful, which not: of which in my first Books I have written sufficiently; nor do I in this Book intend to write any tittle that is in them contained; for as I love not *Tautology*, so I deadly hate to wrong my friend.

Grounds, then, as I have formerly written in my first books, being simple or compounded; as simple Clays, Sands, or Gravels together, may be all good, and all fit to bring forth increase; or all evil and barren, and unfit for profit: for every Earth, whether it be simple or compound, whether of it self or of double mixture, doth participate wholly with the Clime wherein it lyeth; and as that is more hot, or more cold, more moist or more dry, so is the earth ever more or less fruitful. Yet for the better understanding of the plain Coun-

Country-man, you ſhall know that both the fruitful and unfruitful Grounds have their ſeveral facts and characters, whereby they be as well known, as by the clime or ſituation of the continent; for that ground, which, though it bear not any extraordinary abundance of graſs, yet will load it ſelf with ſtrong and luſty weeds, as Hemlocks, Docks, Mallows, Nettles, Ketlock, and ſuch like, is undoubtedly a moſt rich and fruitful ground for any grain whatſoever. And alſo, that ground which beareth Reeds, Ruſhes, Clover, Daiſie, and ſuch like, is ever fruitful in Graſs and Herbage, ſo that ſmall coſt, and leſs labour in ſuch grounds, will ever make good the profit of the Husbandman: But with theſe rich grounds at this time I have nothing to do.

To come down then to the barren and unwholeſome Grounds, you ſhall underſtand that they are to be known three ſeveral wayes; firſt, by the Clime and Continent wherein they lye; next, by their conſtitution and condition; and laſtly, by outward faces and characters. By the Clime and Continent, as when the ground lyes far remote from the Sun, or where it lies mountainous and high, ſtony and rocky, or ſo neer unto the Skirts and borders of the Sea, that the continual Foggs, Storms, Miſts, and ill Vapours ariſing from thence do poyſon and ſtarve the earth; all which are moſt apparent ſigns of barrenneſs. By the Conſtitution and Condition, as when the ground is either too extreamly cold and moiſt, or elſe too violently hot and dry; either of which produceth much hardneſs to bring forth, and ſheweth the earth, ſo lying to be good for little or no profit. By the outward faces and Characters, as when you ſee (inſtead of Graſs, which would be green, flowry, and thick growing) a pale thin moſſie ſubſtance cover the earth, as moſt commonly is upon all high Plains, Heaths, Downs, and ſuch like; or when you ſee the ground covered with Heath, Ling, Broom, Braken, Gorſe, or ſuch like, they be moſt apparent ſigns of infinite great barrenneſs, as may be ſeen in many Mores, Forreſts, and other wild and woody places. And of theſe unfertile places, you ſhall underſtand, that it is the clay ground, which for the moſt part brings forth the Moſs, the Broom, the Gorſe, and ſuch like; the ſand, which bringeth forth Brakes, Ling, Heath, and

and the mixt earth, which utters Whinnes, bryars, and a world of ſuch like unnatural and baſtardly iſſues.

Thus having a true knowledge of the Nature and Condition of your ground, you ſhall then proceed to the ordering, earing, and dreſſing of the ſame, whereby it may not only be purged and cleanſed from thoſe faults which hindred the increaſe thereof, but alſo ſo much bettered and refined, that the beſt ground may not boaſt of more ample increaſe, nor your more fruitfull placed Neighbours exceed you in any thing, more then in a little eaſe.

CHAP. II.

Of the Ordering, Tilling, and Dreſſing of all ſorts of plain barren Clayes, whether they be ſimple or compound.

THou whom it hath pleaſed God to place upon a barren and hard ſoil, whoſe bread muſt evermore be ground with ſweat and labour, that maiſt nobly and victoriouſly boaſt the conqueſt of the earth, having conquered Nature by altering Nature, and yet made nature better than ſhee was before: thou I ſay that taketh this honeſt delight in goodneſs, hearken unto theſe following Precepts.

As ſoon as thou haſt well pondered and conſidered the nature of thy ground, & doſt find that it is altogether barren & unfruitful, the clyme and condition not ſuffering it to bring forth any thing of worth or profit, and that thou haſt well weighed what manner of earth it is, as that namely, it is either a ſimple Clay, or a Clay ſo mixt with othet earths, that yet notwithſtanding the Clay is ſtill moſt predominant; thou ſhalt then ſelect or chuſe out of this earth ſo much as to thy ſelf ſhall ſeem convenient, it being anſwerable to the ſtrength of thy Team, and the ability of thy purſe and labour to compaſs; and this earth ſo choſen out, thou ſhall about the beginning of *May*, in a fair ſeaſon break up with a ſtrong Plough, ſuch as is generally uſed in all ſtrong Clay grounds, the Share being rather long then broad, and the Coulter rather ſomewhat bending then ſtreight and caven according as the nature of the ground ſhall require,

The firſt entching of barren Grounds.

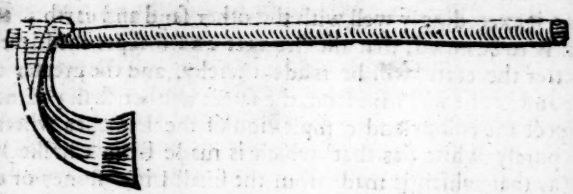
which every ſimple Plough-man will ſoon find out in turning up two or three furrows; for according to the cutting of the earth, ſo muſt the Husbandman faſhion the temper of his Plough.

The manner of Ploughing.

Now for the manner of plowing this bad and barren earth, if the ground lye free from water (which commonly all evil barren earths do) you ſhall then throw down your Furrows flat, and betwixt every Furrow you ſhall leave a baulke of earth half as broad as the Furrow, and ſo go over, and plow your whole earth up, without making any difference or diſtinction of lands: but if you fear any annoyance of Water, then you ſhall lay your Furrows more high, near, and cloſe together, dividing the grounds into ſeveral lands, and proportioning every land to lye the higheſt in the midſt, ſo that the water may have a deſcent or paſſage on either ſide.

Hacking of Ground.

Now ſo ſoon as you have thus plowed up your land, and turned all the ſwarth inward unto the earth, you ſhall then take Hacks of Iron, well ſteeled, and reaſonable ſharp, ſuch a competent number, as your purſe or power can compaſs, or the greatneſs of your ground requireth: for you ſhall underſtand, that one good hacker, being a luſty labourer, will at good eaſe hack or cut more then half an acre of ground in a day; and with theſe hacks you ſhall hew and cut to pieces all the earth formerly plowed up furrow by furrow; and not the furrows onely, but alſo each ſeverd baulke that was left between, and any other green ſwarth whatſoever the plough had eſcaped, and it ſhall be cut into as ſmall pieces as conveniently as you can; for thereby is your mould made much more mellow and plentiful, and your Seed at ſuch time as it is to be caſt into the earth, a great deal the better and ſafer covered, and much more ſooner made to ſprout and bring forth increaſe. Now for the ſhape and faſhion of theſe Hacks, you ſhall behold it in this figure.



When you have thus hacked all your ground, and broke in pieces all hard crusts and roughness of the swarth, you shall then immediately, with all the convenient speed you can (because time is very precious in these labours) if you be near unto any part of the Sea-coast, or to any other Creek or River, where the salt-water hath a continual recourse, thence fetch (either on Horse-back, or in Cart, or other Tumbril, such as the nature of the Country, or your own ease can afford) great store of the salt sand, and with it cover your ground which hath been formerly plowed and hackt, allowing unto every acre of ground, three-score or four-score full bushels of sand, which is a very good and competent proportion; and this sand thus laid, shall be very well spread and mixed among the other hackt and broken earth. And herein is to be noted, that not any other sand but the salt is good or available for this purpose, because it is the brine and saltness of the same which breedeth this fertillity and fruitfulness in the earth, choaking the growth of all weeds, and bad things which would sprout from the earth, and giving strength, vigour, and comfort to all kind of grain, or pulse, or any fruit of better nature. Sanding of Ground.

When you have thus sanded your earth, you shall then if you have any Limestones about your grounds (as barren earths are seldome without) or if you have any quarries of stone (which are seldome unaccompanied with Lime-stone) gather such Lime-stone together, and make a Kiln in the most convenient place you have, as well for the carriage of the Lime, as for the gathering together of the stone, and having burnt your Lime, the manner whereof is so generally well known through the whole Kingdome, that in this place it needeth little or no repetition, you shall then on every Acre so formerly plowed, hackt, and sanded, bestow at least forty or else fifty bushels of Lime, spreading and Liming of Ground.

mixing it exceedingly well with the other ſand and earth; and herein is to be noted, that the ſtronger and ſharper the Lime is, the better the earth will be made thereby, and the greater encreaſe and profit will iſſue from the ſame: neither ſhall you need to reſpect the colour and complexion of the Lime, as whether it be purely white (as that which is made from Chalke) or gray (as that which is made from the ſmall Lime-ſtone) or elſe blackiſh brown (as that which is made from the great ſtone and main Quarry) ſince it is the ſtrength and goodneſs of the Lime, not the beauty and colour, which brings forth the profits.

Manuring of Ground.

Now that this Lime is of excellent uſe, and wonderful profit, do but behold almoſt all the Countries of the Kingdome where there is any barrenneſs, and you ſhall find and ſee how frequently Lime is uſed, inſomuch, that of mine own knowledge in ſome Countries, where (in times paſt) there was one Buſhel made or uſed, there is now many loads, and all riſen from the profitable experience which men have found in the ſame.

Now, when you have thus Limed your ground, you ſhall then take of the beſt manure you have, as Oxe, Cow, or Horſe-dung, Straw rotted either by the littering of beaſts, or by caſting upon high-wayes, the mud of Lakes, Ponds or Ditches; the ſoyle of young Cattel made in the Winter time by feeding at ſtand, Heake, or any ſuch like kind of Ordure; and this manure or compoſt you ſhall carry forth either on Horſe-back, or in Carts of Tumbrels, (according as the Country will afford) and you ſhall lay it and ſpread it upon your ground ſo formerly plowed, Hackt, Sanded, and Limed in very plentiful manner, ſo far forth as your proviſion will extend; for it is to be underſtood, that barren and hard earths can never be overladed with good manure or compoſt, ſince it is onely the want of warmth and fatneſs, which manure breedeth and cauſeth all manner of fruitfulneſs.

Times for all labours.

After you have thus manured all your ground, it is to be ſuppoſed that the ſeaſon of the year will be ſhot on, for the labour of ſanding will take little leſs than two months, your ground being of an indifferent great quantity, except you have aſſiſtance and help of many of your friends, which, is a courteſie

that.

that every Husbandman may embrace, but not truſt unto; for I would not wiſh any man that hath not Tenants to command, to preſume on other friends, leſt they fail him, and ſo his work lye half done, and half undone, which is a great Character of negligence and improvidence: but let every one proportion their labours according to their own ſtrengths, and the number of their ordinary families. The Liming of your ground will take at leaſt half ſo much time as the ſanding, and the Manuring rather more than leſs than the Liming; ſo that by any reaſonable computation of time, beginning to plow your ground at the beginning of *May*, ere it be Hackt, Sanded, Limed, and Manured, *Michaelmas* will be come, which is the end of *September*; for I allow the month of *May* to plowing and hacking; *June* and *July* for Sanding; *Auguſt* for Liming; & *September* for Manuring. So then to proceed on with our labour, at *Michaelmas*, or from that time to the end of *October*, you ſhall begin to plow over that ground again which formerly you had Plowed, Hackt, Sanded, Limed and Manured; and at this latter plowing you ſhall plow the ground ſomewhat deeper then you did before; and taking a good ſtitch (as they call it in Husbandry) you ſhall be ſure to raiſe up the quick earth, which had not been ſtirred up with the Plough before, making your furrows greater and deeper than formerly they were, and laying them cloſer and rounder together then they were before; and in this order or latter earing, you ſhall be careful to Plough your Ground as clean as you can without balks, or other eſcapes in husbandry, and as you thus plow your ground, you ſhall have certain Hackers, with their Hacks to follow the Plough, and to cut the earth and furrows into very ſmall peeces, as was formerly ſhewed in the hacking and cutting of the firſt arder; then ſo ſoon as your ground is thus ploughed and hackt, you ſhall take a paire or two of very ſtrong and good Iron harrows, and with them you ſhall go over your ground, tearing that which was formerly ploughed and hackt into more ſmall peeces than before, and raiſing up the mould in much greater abundance than was formerly ſeen: which work once finiſhed, you ſhall then take your Seed which would be the fineſt, cleaneſt, and beſt Wheat you can provide, and after the manner of good Husbandry,

Second Plowing.

Second hacking.

Firſt Harrowing.

bandry, you ſhall ſow it on the ground very plentifully, not ſtarving the ground for want of Seed (which were a tyrannous penury(nor yet choaking it with too much (which is as laviſh a foolery) but giving it the full due, leave it to the Earth and Gods bleſſing.

Of ſowing the ſeed.

The ſecond Harrowing.

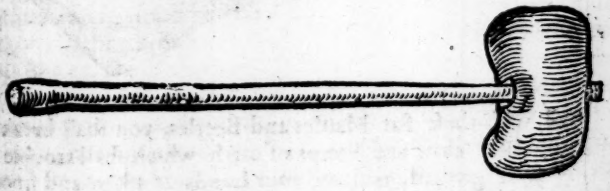
Now ſo ſoon as you have thus ſown your ſeed, forthwith you ſhall take all the harrows again, harrowing the ſeed into the earth, and covering it cloſe and well with all care and diligence: and in this latter harrowing, you ſhall have great reſpect to break every clot as much as you can, and ſo ſtirr up and make as much mould as you can, and the finer ſuch mould is made, the better it is, ſo it cover deep and cloſe; for you ſhall underſtand, that all theſe kinds of barren Clayes are naturally tough, cold, and binding, whereby they ſtifle and choak any thing that growes within them; for the natural toughneſs of the earth will not give any thing leave to ſprout, or if it do ſprout, the binding nature thereof ſo fetters and locks it within the mould, that it cannot iſſue out; or if it do (with extreme ſtrugling) riſe through the pores of the ſame, yet doth the cold preſently ſtarve the root, and make the ſtemme utterly unable to bring forth fruit, or any profit at all, ſo that if the toughneſs be not converted to a gentle looſeneſs, and eaſie dividing of it ſelf, the coldneſs unto warmth, and the hard binding unto a ſoft liberty, there can be ſmall hope of commodity, which this manner of dreſſing the earth bringeth to paſs; for the mixture of the ſand takes away the toughneſs, the Lime brings heat, and the manure comfort and liberty: As for the hacking and cutting the earth, that is, to make all the reſt ſymbolize and mix together; for as if any by a Diſpenſatory make a Medicine, and caſt his ingredients confuſedly one upon another, without care of mixture, melting, or diſſolution, ſhall find but a corrupt, diſorderly, and ill compounded receit; ſo he that dreſſeth and manureth his ground, and doth not by hacking, plowing, or ſome other Husbandry courſe mix the earth, and the compoſt perfectly well together, ſhall ſeldome find profit from his ſeed, or find any man of wit deſirous to become his imitator. Now I muſt confeſs, that ſome eaſie grounds of light and temperate nature, will mix very well and ſufficiently by the help of the Plough only;

aults in the irth.

only; but this barren hard earth of which I now write, muſt onely be broken by this violent and extreme labour, or elſe there will neither be mould, earth, or any converture for the Seed, but only foul, great, and diſorderly clots and lumps, through which the grain can never paſs, and that which lyeth uncovered will be made a prey to fowl, and other vermine, which will hourly deſtroy it.

Of clotting the Earth.

After you have ſown and harrowed the ground, you ſhall then ſee if there remain any clots or hard lumps of earth unbroken, which the teeth of the harrow are not able to tear in pieces (as it is very likely you ſhall perceive many) for theſe hard barren earths which are plowed up in their green ſwarths, are nothing neer ſo eaſily broken and brought to mould, as are the mellow ſoft earths which have been formerly plowed many times before, becauſe the hard and intricate roots of the Graſs, Moſs, and other quick ſubſtances growing upon the ſame doth bind and hold the mould ſo cloſe and faſt together, beſides the natural ſtrength and hardneſs of the earth, that without much induſtry and painfull labour, it is impoſſible to bring it to that fineneſs of mould which Art and good Husbandry requireth; therefore as ſoon as you behold thoſe clots and lumps to lye undiſſevered, and unbroken, you ſhall forthwith take good ſtrong clotting beetles, or mauls made of hard, and very ſound wood, according to the proportion of this figure.

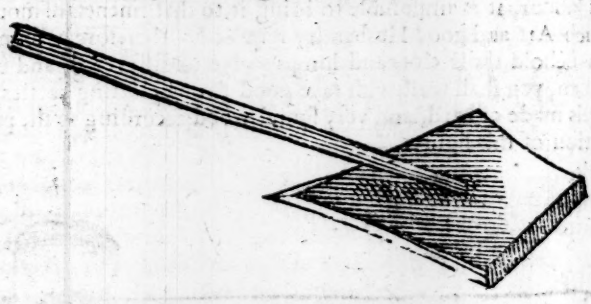


And with theſe mauls or clotting beetles, you ſhall break all the hard clots and lumps of earth in pieces, even to ſo ſmall duſt as poſſibly you can, becauſe you are to preſuppoſe that theſe clots thus hard, tough, and unwilling to be with any meanes digeſted into

into mould, are either not at all, or elſe very inſufficiently mixed with the Sand, Lime, and other manures: and therefore you muſt rather break them that thereby they may mixe, and give eaſie paſſage to the Grain, and not like heavy poyſes and dead lumps lye and preſs down the Seed ſo that it cannot ſprout.

Another manner of Clotting.

But if it ſo fall out, partly by the hardneſſe of the ill earth, partly through the ſeaſon and dryneſs of the year, that theſe clot and lumps of earth will either not be broken at all, or at leaſt ſo inſufficiently that the mould will not be any thing near ſo fine as you would have it; you ſhall then, having done your beſt endeavour, let your ground reſt till there have faln a good round ſhower or two of rain: which may wet the clots through and through; and then the next fair blaſt you ſhall take your clotting beetles, but not thoſe which you took before in the dry ſeaſon, but ſome much lighter, broader and flatter, being made of thick Aſh-boards more than a foot ſquare, and above two inches in thickneſs, according to this figure.



And with theſe flat Maules and Beetles, you ſhall break all the unbroken clots and lumps of earth which ſhall trouble or annoy your ground, making your Lands as plain and ſmooth as is poſſible, ſo that the grain may have eaſie paſſage forth; which labour as ſoon as you have finiſhed, you ſhall then refer the increaſe and proſperity thereof unto the mercies of God, who no doubt will give his bleſſing according to thy labour and thankfulneſs.

As

As touching the trimming and weeding of this Corn, after it is ſprung a foot above the earth, or thereabout, you ſhall underſtand, that theſe hard barren grounds are very ſeldome troubled with weeds; for weeds, eſpecially great, ſtrong, and offenſive weeds, are the iſſues of rich and fertile ſoils; yet, if through the trimming and making of this earth (which is not commonly ſeen) you do perceive any ſtore of thiſtles or other groſſer weeds to ſpring up, you ſhall then in the month of *May*, with hooks, nippers, and ſuch like tools, cut them away, or pull them up by the rootes, which indeed is the better manner of weeding. Of Weeding.

Now here is to be underſtood, that your ground being thus dreſſed and trimmed as is before ſhewed, you may very well for the two firſt years ſow Wheat or Rye upon it, but Wheat is the greater profit and more certain ſeed; the third year beſtowing but your fold of Sheep upon it, that is, manuring it with your Sheep, (for it is to be intended, that in theſe barren earths ſheep are the greateſt ſtock of which the Husbandman can boaſt) you may very well ſow it with Barley, and have a fruitfull & plentifull crop thereon; the next three years, you may ſow it with Oats; and the ſeventh year you may ſow it with ſmall white Garden Peaſe or Beans, according as you ſhall find the ſtrength and goodneſs of the ground, (for Beans deſire ſomewhat a richer ſoyl than the Peaſe;) then for three or four years following the ſeven, you may let it lye at reſt for graſs, and doubtleſs it will yield you either as good paſture, or as good Meadow as you can reaſonably require. And then after the expence of this time, it ſhall be good that you dreſs and order your ground again in ſuch ſort as was formerly declared, and thus you may every year dreſs one or other piece of ground, till you have gone all over all your ground, or at leaſt, as much as you ſhall think expedient; and without faile, he that is Maſter of the moſt fruitfull eſt and richeſt ſoyl, ſhall not boaſt of any greater increaſe then you ſhall, only your charge may be a little more, and ſo ſhall be alſo your commodity, which ſhall make an amends for your charge: as for your toyles, yours ſhall be much the leſs, by a juſt computation; for though you have many labours, yet they are but Summer labours, and neither hurt your own body, nor your Several Seeds ſeveral years.

Cattel; whereas the Maſter of the rich ſoyl is in continuall work both Winter and Summer, labouring twice ſo much to confound the ſuperfluous growth of Weeds, as you do to beget the increaſe of Corn, and whereas he muſt ever keep a third or fourth part of his Corn ground without fruit, you ſhall not keep any which ſhall not yield you a ſufficient Commodity.

Objection. Now me-thinks I hear in this place to be objected unto me, that whereas I do preſcribe the ſanding of theſe barren earths with the ſalt Sea-ſand and no other, (as it is true, for all other freſh ſand is unvailable) what if the ground do lye ſo far within the Land, that there is no ſalt ſand within many ſcore miles of it, how then ſhall I make good my barren earth? ſure to fetch ſand ſo far will never equal the coſt; or it may be this experience hath no further limits then to ſuch hard and barren earths as lye alongſt the Sea coaſt only.

Anſwer. To this I anſwer, that albeit this ſalt Sea-ſand be of infinite good and neceſſary uſe, inriching grounds wonderfully much, yet is not this experience of bettering of barren ſoiles ſo ſtrictly bound thereunto, but that without any uſe of the ſame, you may make your earth as fruitful in Corn or Graſs, as hath been already formerly declared.

Ordering Earth where Sands wanteth. Therefore if your ground lye much within the Land, and far from the Sea, ſo that this Commodity of ſand is not by any poſſible means to be gotten; then you ſhall (having firſt looked into the Nature of your ground, and finding it to be by all characters and faces a cold, barren, ſtiff, dry Clay, yielding nothing but a ſhort moſſie Graſs, without any other burthen at all, as is ſeen upon moſt Plains, and Downs of this Kingdom) firſt plow it, and hack it, as was before ſhewed in the former part of this Chapter, then inſtead of ſanding it, you ſhall lime it as aforeſaid, or rather a little more plentifully, then you ſhall manure it, after (as at ſeed time) you ſhall plow it and hack it again, then harrow it as before ſaid; then to every Acre of ground you ſhall take two buſhels of very dry bay-ſalt, and in ſuch manner as you ſow your wheat, you ſhall ſow this ſalt upon the ground; then immediately after the ſowing of the ſalt, you ſhall ſow your Wheat, which Wheat would be thus prepared before you ſow it; the day before you are to ſow your grain, you

Sowing of ſalt. ſhall

ſhall take bay ſalt and water, and mixing them together make a brine ſo ſtrong that it will bear an Egge, then put the Wheat you are to ſow into that brine, and let it ſteep therein till the next day, then drain it as clean as may be from the brine, and ſo ſow, harrow it, clod it, and weed it, as was before declared, and no doubt but you ſhall find a marveilous great increaſe thereby; for this I can aſſure you, both from a moſt certain knowledge, and a moſt worthy Relation, that a Gentleman buying ſome ſtore of Seed-wheat; and inforſt to bring it home by Sea, by ſome caſual means, ſome of the Sacks at the unlading, fell into the Sea, and were much drencht in the ſalt-water, whereat the Gentleman being grieved (as doubting ſome hurt to come to the ſeed) yet inforſt of neceſſity to make uſe thereof, cauſed all the Wheat which was ſo wet to be ſown by its ſelf in a particular place, and upon the worſt ground which he had, (as much deſpairing in the increaſe thereof) and it is moſt infallibly true, that of that wet ſeed, he received at leaſt five fold more profit then of any other; and from thence it came, that this experiment of Brine and the ſowing of ſalt hath taken place; from which the painful Husbandman hath found ſuch infinite increaſe to ariſe, that the uſe thereof will never be laid down in this Kingdome. Neither is the thing it ſelf without good and ſtrong probability of much increaſe and ſtrength for the bettering of all manner of arable grounds; for there is nothing which killeth weeds, quicks, and other offences of the ground ſo much as ſaltneſs: for what makes your Pidgeons dung & your Pullens dung to be better for arable grounds, then any other dung, or manure whatſoever, but by reaſon of the ſaltneſs thereof; by which ſaltneſs alſo, you may judge the ſtrength and heat thereof, in ſo much that the proper taſte of fire, or any hot thing is ever ſalt; alſo we ſay in Philoſophy, that blood which carryeth the vital heat and warmth of the body is in taſte ſalt, and ſo a nouriſher, maintainer, and increaſer of all the ſtrength and vigour of the inward faculties; whereas Flegm, Choler, and Melancholly, which are the hurts, and confounders of the vital ſpirits, the firſt is in taſte ſweet, the ſecond bitter, and the laſt of an earthly and dry taſte, full of much loathſomeneſs.

The Excellency of Salt.

Now again, you ſhall underſtand, that as you thus wet or ſteep ſeed in brine,

Of ſteeping

ſteep your Wheat ſeed, ſo you may alſo ſteep any other Seed; as barley, oats, beans, peaſe, lupins, Fetches, and ſuch like; of which your beans, peaſe, and lupins, you may ſteep more than any of the reſt, and your Oats the leaſt.

As touching Rye, it ſhall be good not to ſteep it at all, for it is a great enemy to all manner of wet and moyſture, inſomuch, that the carefull Husbandman will forbear to ſow it in any ſhowre of rain, bearing in his mind this ancient adage, or ſaying, that *Rye will drowne in the Hopper*; as on the contrary part, *Wheat would be ſown ſo moiſt that it might ſtick to the Hopper*: Yet notwithſtanding, when you do ſow Rye in any of theſe In-lands, and cold barren Countries, where ſand is not to be gotten, you ſhall not by any means omit the ſowing of your ſalt before; for it is nothing neer ſo moiſt as it is warm and comfortable.

CHAP. III.

Of the ordering, Tilling, and dreſſing of all rough Barren Clayes, whether ſimple or compound, being laden and over-run with Gorſe, Broom, and ſuch like.

NExt unto theſe plain barren earths, which by reaſon of their heights, are ſubject in the Winter time to all manner of cold, froſts, ſtormes, tempeſts, blaſts, and winds, which are the perfect hinderers of all encreaſes and growth; and in the Summer time to all hot ſcorching, ſcaldings, and fiery reflections of the Sunne, which on the contrary part, burneth and withereth away that little ſeeming increaſe which appeareth above the earth; I will place that barren cliy whether it be mixt or unmixt, which lying not ſo high, and being ſubject unto thoſe hurts and offences, ſeemeth to be a little more fruitfull, yet either by the extream cold moiſture thereof, or the ſtony hardneſs and other malignant qualities, is no leſs barren than that of which I have formerly written, which indeed is that barren and vile ſoyle, which will neither bear corn nor graſs, but is onely over-run and quite covered over

over with great, thick, and tall buſhes of Gorſe or Furres, which is moſt ſharp, woody, and groſs weed, ſo full of pricks, that neither Horſe, Beaſt, Sheep, nor Goats, dare thruſt their noſes to the ground to gather up that little poor graſs, which groweth thereon. And albeit theſe Gorſe or Furs are one way a little commodity to the needfull Husbandman, in being a reaſonable good fuel, either for baking, brewing, or divers other ſudden and neceſſary uſes; yet in as much as the profit being compared with the great quantity of earth which they cover and deſtroy, and which with good Husbandry might be brought to great fruitfulneſs, it is indeed no profit at all; it ſhall not be amiſs for every good Husbandman that is peſter'd and over-laden with ſuch ground, to ſeek by way of good Husbandry how to reduce and bring it to that perfection and excellency which may be beſt for his own particular commodity, and general good of the Kingdome wherein he liveth.

Then there is another kind of ſoile which is nothing at all differing from this, but is every way as barren and ſterile, (which is as noyſome a weed as the former) and though it have not ſuch ſharp prickles as the other, whereby to hinder the grazing of Cattel, yet doth it grow ſo cloſe and thick together, and is naturally ſo poiſonous and offenſive to graſs, that you ſhall ſeldome ſee any grow where this Broom proſpereth; beſides, the bitterneſs thereof is ſo unpleaſant and diſtaſtfull to all kind of Cattel, that not any will ever crop or bite upon the ſame, only it is of ſome neceſſary uſe for the poor Husbandman, in reſpect that it ſerveth him both for fuell, for thatching and the covering of his houſes, (being for that purpoſe, of all, the longeſt laſting) and alſo for the making of Beeſoms for cleanſing of the houſe and barnes, or elſe for ſale and commodity in the Market; all which profits (as before I ſaid) being compared with the loſs of the ground, and the goodneſs that might be reaped from the ſame, are indeed truly no profits but hinderances.

Therefore I would wiſh every man that is Maſter of ſuch grounds, whether they be over-run with Gorſe, Furres, Broom, or any ſuch kind of groſs, woody, or ſubſtantial weed, firſt to cut up

Deſtroying of Weeds.

up the weed (of what ſort ſoever it be, whether Gorſe, Furs or Broom) as cloſe and neer to the ground as you can poſſibly, and then making them up in ſheafs or bigge faggots, carry them home, and ſtack them up very dry, ſo as no rain may enter or pierce into them, for the ſmalleſt wet will rot and conſume them to dirt and filthineſs; which done, you ſhall make Labourers with hacks, picks and ſuch like tools, to ſtub up all the roots which you left in the ground, even to the very bottom of the ſame; and theſe roots you ſhall be very careful to have ſtubbed up exceeding clean, by no means leaving (ſo near as you can) any part or parcell of the roots behind you; then theſe roots thus ſtubbed up, you ſhall diligently gather together into little heaps, as bigge as Moal-hills, and place them upon the ground a pretty diſtance one from another, and ſo let them lye till the Sun and Wind have dryed them: for it is intended, that this labour muſt begin about the latter end of *April*, and beginning of *May*.

Then ſo ſoon as you find theſe roots are thorowly dryed, you ſhall pile them handſomely together, laying them a little hollow one from another, and then with a hack cut up ſome of the ſame earth, and therewithall cover all the roots quite over, only leaving a vent hole at the top, and on one ſide, and ſo let the hills reſt two or three dayes, till the earth be a little parcht, and dried, then take fire and ſome other light dry fuel which is apteſt to blaze, and with the ſame kindle every hill, not leaving them till you ſee them perfectly on fire; which done, let them burn both day and night, till the ſubſtance being wholly conſumed, the fire go out of it own ſelf, and this in ſome Countries is called the *Burning of Bait*.

Burning of Bait.

Now as ſoon as the fire hath been extinguiſhed for two or three dayes, you ſhall then come, and with ſhovels (& beetles to break the hard burnt earth in pieces) you ſhall ſpread all the aſhes clean over the ground; which done, you ſhall with a very long plough tear up the earth into great and deep furrows, and divide it into Lands, as you ſhall think meet and convenient, laying them higher, and flatter, as you ſhall have occaſion; and as the ground lyeth more or leſs within the danger of water, whether it be the over-flowing of ſome neer Neighbouring Brooks,

Breaking of the burnt Earth.

Brooks, or Rivers, or elſe other ſtanding water occaſioned by Rain and extraordinary Showres, which muſt be carefully lookt unto; becauſe all over-flows and inundations of water is a mighty deſtroyer and conſumer of grain; but theſe barren grounds of which I now write, are very ſeldome oppreſt with water; for moſt commonly they lye ſo high, that the continuall dryneſs thereof is a ſtrong occaſion of the much unfruitfulneſs. After you have thus burnt your baite, and plowed up your ground, you ſhall then with your hacks hack it into ſmall pieces, in ſuch manner as was declared in the former Chapter; then you ſhall (if the Sea be any thing near you) ſand it with ſilt ſand (as before ſaid) then lime it, and after, manure it either with Ox-dung, Horſe-dung, rotten Straw, mudd of Ponds and Ditches, the ſpitling of Houſe-floores, or ſweeping of Channels and Streets, or ſuch like; or for want of all theſe, in caſe you dwell neer unto the Sea-coaſt (where manure for the moſt part is in greateſt ſcarcity, and the hardeſt to come by) you ſhall gather from the bottom of the rocks (where the ſeydge of the Sea continually beareth) a certain black weed, which they call Hemp-weed, having great broad leaves, and growing in great abundance, in thick tufts. and hanging together like peaſe-ſtraw; and with theſe weeds you ſhall cover your lands all over of a pretty good thickneſs, and then forthwith you ſhall plow it again ſomewhat deeper, and with ſomewhat greater furrows then before, raiſing up the new quick earth to intermingle, and mix with thoſe manures and helps which thou haſt formerly prepared and laid upon the ground; then you ſhall again hack it, and harrow it; then you ſhall take Pigeons dung, or Pullens dung (that is, any kind of land fowl whatſoever, but by no means any water fowl) or Pigeons dung and Pullens dung mixt together, and allowing to every acre two or three buſhels thereof, which is the true quantity of ſeed proportioned for the ſame, and this dung being broken and maſht into ſmall pieces, you ſhall put into your Syclop or Hopper, and in the ſame manner as you ſow your corn, you ſhall ſow this dung upon the ground, and then immediately after it you ſhall ſow your Wheat, either ſteept in brine, or elſe ſalt Sea-water, or unſteept as you ſhall think good; but in caſe you can neither get ſalt ſand

Cauſes of unfruitfulneſs.

An Excellent Manure.

Of Plowing.

Of divers Manures.

Mixture of Manures.

ſand nor Sea Rock-weeds, then you ſhall by no means omit the ſteeping of your Seed; neither ſhall you fail before you ſow your Seed, to mix with your pidgeons and pullets dung, a full equal part of Bay-ſalt well dryed and broke, and ſo ſown with the dung upon the land, and then the ſeed after it; which done, you ſhall harrow it again, clot it, fleight it, and ſmooth it, in ſuch ſort as was formerly declared in the former Chapter, for theſe labours have no alterations, but muſt in all points be done as was before ſet down.

Of weeding.

Now touching the weeding of this earth, after the Corn beginneth to grow about the ground, there is no fear to be had either of Thiſtles, Tares, Cockles, Darnel, Docks, and ſuch like ſtrong weeds, which indeed are the iſſues of good grounds ill ordered and handled; but the weeds which you ſhall moſt fear in this place, is young Gorſe, or Furrs, or elſe young Broom, which are very apt to grow from the leaſt part or parcell of roots that ſhall be left behind; Nay, the very nature of thoſe barren earths is ſuch, that of its own accord it will bring forth thoſe weeds: the cold ſharpneſs of the air mixing with the ſterility & roughneſs of the earth, being the cauſe that it will give life to no other better plants; therefore ſo ſoon as you ſhall behold any of them to appear above the earth, though they be not halfa finger high, you ſhall preſently with all diligence pull them up by the roots, and caſt them away, or lay them in heaps that they may be afterwards burnt, and the aſhes ſprinkled upon the ground: And herein is to be obſerved, that the younger and the ſooner that you do pull up theſe weeds, the better it is, and the eaſilier they will come from the earth, and the ſooner be deſtroyed: for all thoſe mixtures wherewith already you have been taught to mix your earth, are in themſelves ſuch naturall enemies to all theſe kind of barren weeds, that ſhould you omit the manual labour of deſtroying them (which no good Husband willingly will do) yet in time the earth of it ſelf, and the often plowing of the ſame would leave no ſuch offence of weeds, or other growths which might hinder the corn.

Time for Weeding.

Now touching the beſt time when to pull away theſe weeds, though generally it muſt be done aſſoon as they do appear above the ground; yet it ſhall not be amiſs for you to defer the

work

work till after a ſhowre of rain, and then immediately after the ground is wet) and ſo by that means more apt and willing to open and forſake the root faſtned within it) you ſhall with all diligence pull them out of the ground, and deſtroy them: neither ſhall you pull them out of the ground with your hands only; for the Gorſe have exceeding ſharp pricks, ſo that with your naked hands you are not able to touch them, and to arm your hands againſt them, with ſtrong thick gloves, would be too boiſterous and comberſome, ſo that ſometimes you might either miſs the weeds, and pull up the corn; or elſe pull up the corn and weeds both together; therefore to prevent all theſe caſualties or hinderances, you ſhall take a pair of long ſmall wooden Nippers, made after the form of this figure.

And with theſe you ſhall pull the weeds out of the ground, and caſt them into the furrows by the ſides of the Land, till your dayes work be finiſhed, and then with a rake you ſhall rake them together, and ſo lay them in heaps to dry and wither, in more convenient places; that when time ſhall ſerve, you may burn them, and uſe them, as was before declared.

Gathering of ſtones.

Laſtly, you ſhall have great reſpect, that if this ground be very much troubled with looſe ſtones, as flint, pibble, and ſuch like, that then you very carfeully get them gathered from the ground, both before and after you have plowed it, and to lay them on heaps in other vacant places, where they may ſerve for pavings, and ſuch like purpoſes when time requireth: but if the ground be over-run with great, or elſe ſmall Limeſtones, as for the moſt part theſe barren grounds are; then ſhall you with all care gather them up, and lay them in great heaps in ſome corner of your field, where you may make a convenient Lime kiln, and ſo there burn theſe ſtones thus gathered, which will be

both an infinite profit, and an infinite eaſe to the reſt of your labours.

CHAP. IV.

Of the Ordering, Tilling, and Dreſſing of all rough barren Clayes, whether ſimple or compound, that are over-run with Whinnes, or ſuch like.

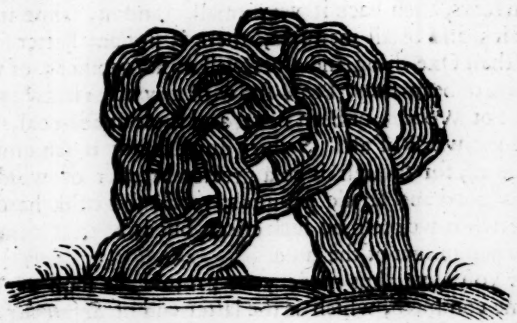
NExt unto this barren Clay, which is over-run with Furſe, Broom, and ſuch like, I will place that barren and unfertile earth, being alſo a Clay, whether ſimple or compound, which is over-run onely with Whinns, and indeed bearing little or no other burthen, or if it do bear any other burthen, as ſome little ſhort moſſie graſs, yet is that graſs ſo covered over with theſe ſharp Whinns, that not any beaſt dare put his noſe to the ground, or bite upon the ſame; and indeed this kind of earth is not any whit at all leſs barren than thoſe of which I have already written, but rather more, in that the malignant qualities thereof are not ſo ſoon corrected, nor yet the vertues ſo ſoon reſtored.

What whinnes are.

Whinnes are a certain kind of rough dry weeds, which grow buſhie and thick together, very ſhort and cloſe unto the ground, being of a dark brown colour, and of crooked growth, thick and confuſed, and full of knots, and thoſe knots armed with hard, long ſharp pricks like thorns or bryars, they have little brown leaves which ſhaddow the pricks, and do wind their branches ſo one into another, that they can hardly be ſeparated, yet is not their growth at any time little more than a handfull above the earth, only they ſpread exceedingly, and will run and cover over a whole field, chooking up all ſorts of good plants whatſoever, and turning the beſt graſs that is, to moſs and filthineſs: wherefore if at any time you be Maſter of any ſuch naughty and barren ground, and would have it reduced unto goodneſs and fertility, you ſhall firſt take a fine thinn paring ſhovel made of the beſt Iron, and well ſteeled, and hardoned round about the edges, according to the form of this figure following.

And

And with this paring-ſhovel, you ſhall firſt pare up all the upper ſwarth of the ground, above two inches, or an inch and a half thick at the leaſt, and every paring would be ſome three foot in length at the leaſt, and ſo broad as the ſhovel will conveniently give it leave, and this ſwarth thus pared up, you ſhall firſt turn the Whinny or Graſs-ſide downward, and the earth ſide upward and ſo let it lye two or three dayes in the Sun to dry (for this work is intended to begin in the month of *May*) and when that ſide is well dryed, you ſhall turn the other ſide, and dry it alſo, then when all the ſwarth is dryed, you ſhall gather ſix or ſeven peeces together, and turning the Whinny or Graſs ſide inward and the earth ſide outward, you ſhall make round hollow little hills thereof, much according to the faſhion of this Figure following.



And the inward hollowneſs like unto the hollowneſs of an Oven, but much leſs in compaſs; which done, you ſhall fill the hollowneſs with dry chips, or ſmall ſticks, or Furſe and Straw

mixed together, which you ſhall put in at the vent-hole which ſhall be left on one ſide of the hill, and kindling it with fire, you ſhall burn all that ſwarth in ſuch ſort as you burnt the roots of your Furſe and Broom before; for this is alſo called a burning of bait, as well as the former; for it is a moſt principal nouriſher of the earth, and a very ſudden deſtroyer of all malignant weeds whatſoever.

Breaking of Baits. After the burning of your hills, as ſoon as the fire is utterly quenched and gone out, and no heat at all left in the hills; you ſhall then with clotting beetles beat them all down to duſt, and then with ſhovels you ſhall ſpread the aſhes quite over all the ground, as was before declared in the former Chapter: and herein is to be noted, that you muſt place theſe hills as thick and cloſe together as by any means poſſibly you can, making your hills ſo much the leſs and lower, that they may ſtand thicker and nearer together, and ſo cover more ground, and thereby the heat and ſtrength of the fire to diſperſe it ſelf over all that peece of ground; for the fire burning upon the earth, doth as much good for the inriching of the earth, and deſtroying of the weeds, as the aſhes doth which are ſpread upon the ſame.

Plowing. Now after your bait is in this manner burned and ſpread, you ſhall then (as before ſhewed) plough up your ground in good large furrows, then hack it very ſmall, Sand it, Lime it, and manure it; and of all manures, there is not any better for this ground than Oxe-dung, and aſhes well mixt together; of which aſhes, thoſe of bean-ſtraw, Peaſe-ſtraw, or any other ſtraw are beſt; and thoſe of Wood; or Fern next, and thoſe of Sea-coal, or Pit-coal are the worſt of all. Swines dung is not much amiſs for this ground, for though it be a greater breeder of weeds and thiſtles in good and fertile grounds, yet in this cold, hard, and barren earth it worketh no ſuch effect, but is a great comforter and warm moiſtner of the ſame.

After you have thus made your ground, as ſoon as Wheat ſeed-time commeth, which is the latter end of *September*, and beginning of *October*, you ſhall then with great care plow over your ground again, and take great reſpect that you turn up your furrows much deeper than before, and that for two ſpecial

cauſes,

cauſes; the firſt, that the new earth may the better be mixt with the old earth, and thoſe helps that are added thereunto; and ſecondly, that you may be ſure to tear up the roots of all the Whinns from the very bottom of the earth, not ſuffering any part of them to remain behind, and for this purpoſe it ſhall not be amiſs to have an idle boy or two to follow your plow, and to gather away all the roots that ſhall be torn up, or any way elſe left bare above ground, which roots ſhall be laid on heaps in convenient places, and then after burnt, and the aſhes thereof ſpread upon the ground: which will be a very great comfort unto the ſeed, being a ſpeedy help unto the ſprouting thereof, and a very warm comforter of the root after the ſtemme is ſpindled above ground, for in theſe cold barren earths nothing doth ſo much ſpoyl and ſlay corn, as the dead coldneſs which lyeth at the root thereof; for in many of theſe unfertill places, you ſhall ſee Corn at the firſt ſowing (whilſt there is a little ſtrength in the ground) ſprout in great abundance, promiſing much hope of the profit: but when it ſhould ſpindle and come to much better perfection, that poor ſtrength being ſpent and conſumed, and the cold and dryneſs of the ſoyl, having as it were over-come all matter of comfort, then preſently you ſhall ſee the blade of the Corn turn yellow, the ſtemm or ſtalk to wither, and either put forth no ear at all, or elſe a very poor little empty one, being laden with nothing but a moſt dry chaffie husk without ſubſtance. But to come again to our purpoſe, after you have thus plowed up your ground the ſecond time, you ſhall then hack it again, and harrow it, as was declared in the former Chapters; then you ſhall take your ſeed-wheat which hath been ſteept either in brine or Sea-water, and to every buſhel of that ſeed you ſhall add a buſhel of bay-ſalt, and mix them very well together in your Hopper or Sydlop, and ſo ſowe them together upon the ground, obſerving to double your caſt ſo oft, that you may not fail to caſt that true quantity of ſeed into the earth, which otherwiſe you would have done, if ſo be there had been no mixture at all; for to do otherwiſe were to deceive the ground, and a handfull of ſeed ſo ſaved would be the loſs of a peck in the time of Harveſt; therefore have great reſpect that your ground have his due; for it is no

more

more coſt, though it be a little labour.

Harrowing. When your ſeed is ſown, you ſhall harrow it again the ſecond time, clot, ſmooth it, and ſleight it, as was before declared in the former Chapters.

Weeding. As touching the weeding of this ground, it is the leaſt labour of all other, for the earth being ſo corrected as is before ſhewed, it will naturally of it ſelf put forth no weeds, eſpecially if you remember to plough it deep, and be ſure to tear up and gather away all the quick roots, otherwiſe if that labour be any thing neglected, then will it put forth both Whins and great ſtore of other rough weeds, which as ſoon as you ſhall perceive to appear, you ſhall preſently with your woodden nippers pull them up by the roots, as was at large declared in the foregoing Chapter.

Profits. Now for the general profit of this ground thus made and prepared, it is the ſame that the two former are, that is to ſay, it will bear you good and ſufficient Wheat, in plentifull abundance for the ſpace of two or three years; then barley a year after; then Oats three years together after the barley; and peaſe or beans a year after the oats; then Laſtly, very good Medow or Paſture for the ſpace of three or four years after, and then you ſhall begin and dreſs it again, as was formerly declared.

CHAP. V.

Of the ordering, Tilling, and Dreſſing of all barren Clayes whether ſimple or compound, which are over-run with Ling or Heath.

THere followeth now ſucceſſively another ſort of barren earth, which indeed is much more ſterile and barren than any of the other formerly written upon; becauſe they, out of their own nature, do bear a certain kind of graſs or food which will relieve ordinary hard ſtore-Cattel, whether it be Sheep, Goats, or young Beaſts: But this earth, of which I am now to entreat, beareth no graſs at all, but only a vile filthy black brown weed, which we call Ling, or Heath, the tender tops whereof Cattel and wild Deer will ſometimes crop, yet it is to them but little relief, and only maintaineth life and no more.

Now

Now albeit ſome may object unto me, that this kind of ſoyl is ever a ſandy ſoyl, and no clay, as may be ſeen in moſt Chaſes, Forreſts, and Downs; yet I anſwer, that albeit it hold ſo in general, yet there are divers clays, eſpecially in mountainous Countries, that are peſtered with theſe kind of weeds, as may be ſeen in the North, and North-weſt part of *Devonſhire*, in ſome parts of *Cornwall*, and in many parts both of North and South *Wales*; and theſe clay grounds which are thus offended with theſe weeds of Ling, or Heath, are much more barren and unfruitful than the Sands, becauſe of their much more coldneſs; yet thoſe clayes which are mixed with either black Sand, dun Sand, or yellow Sand, and over-runn thus with Heath or Ling, are the moſt barren of all. To make any further deſcription of this Heath or Ling, being a thing ſo notoriouſly known over all this Kingdome, I hold it meerly needleſs, only to ſay it is a rough brown weed, ſhooting out abundance of ſtalkes from one root, with little dark leaves, and flowers on the top, of a pale reddiſh colour, much inclining unto Peach colour at the firſt: but being full blown, they are then a little more whitiſh.

You therefore that have any ſuch ground, and deſire to bring it to fruitfulneſs, and bearing of good Corn and Graſs in a reaſonable abundance, you ſhall firſt with ſythes or ſharp hooks (but old ſythes are the better) cut down all the Heath, or Ling, which groweth upon the earth you intend to convert to goodneſs, ſo neer the ground as poſſibly you can; then when it is cut down (which would ever be at the beginning of the Month of *May*) you ſhall let it lye upon the ground, daily toſſing and turning it till it become very dry, then ſpreading it all over the ground, and mixing or covering it with dry ſtraw of any kind whatſoever, you ſhall preſently ſet it on fire in ſo many ſeveral corners of the field, that all the ſeveral fires in the end may meet in one poynt, and not leave any part of the mowen Heath or Ling unburnt, or any part of the ground unſcorched; After this is done, and the ground cooled, you ſhall with your flat clotting beetles beat the aſhes hard into the ground, then you ſhall take a ſtrong plow, with a broad winged ſhare, and an even coulter, and you ſhall plow up all this ground thus burnt in

Deſtroying of Heath.

in very large and deep furrowes, by no means picking out any of the quick roots which ſhall remain in the furrows ſo turned up, but letting them reſt in the earth ſtill; then with your hacks, and the help of your Iron paring ſhovel, you ſhall cut up the furrows, formerly turned up, into ſhort pieces, of three foot, or three foot and a half long, and ſome leſs as occaſion ſhall ſerve: then with theſe pieces, you ſhall build little hollow hills, ſuch as in the former Chapter you made of the upper ſwarth of the ground only; and then filling the hollowneſs with dry heath, and dry ſtraw mixt together, you ſhall ſet every hill on fire, and ſo burn the very ſubſtance of the earth into aſhes, which will ſoon be done by reaſon of the infinite number of roots and ſmall ſtrings, which lye mixt in the earth, and the dryneſs thereof occaſioned by the former burning: And this is another kind of burning of Baite, much differing from all the former, and yet to as great end and profit as any whatſoever; and theſe hills muſt, as the former, be placed one as near another as is poſſible, ſo as they may ſpread and cover over the greateſt part of the ground, and leaving no more than a good reaſonable path to paſs between hill and hill.

Another burning of Baite.

Now as ſoon as you have burned all your Baite, and that your hills are cold, you ſhall then as was before ſhewed in the former Chapter, with beetles and ſhovels break down the hills, and ſpread the earth and aſhes over all the ground, which done, you ſhall ſand it (if the ſituation of the ground be anſwerable thereunto) and lime it in ſuch ſort as was ſhewed in the ſecond Chapter; then when it is limed, and the lime equally ſpread, not more in one place than in another, you ſhall then manure it with the beſt manure you can provide, of which there is none better or more proper for the ground than mans ordure, and the rubbiſh, ſweepings, parings, and ſpitlings of houſes mixt together: for want of this (becauſe it may not be in ſo great plenty as other manures) you may take either old Oxe dung, or Horſe dung, or for want of them the old rotten and muddy ſtaddles or bottomes of Corn ſtacks of Reeds, eſpecially Peaſe-ſtacks, or Bean-ſtacks, provided that it be throughly rotten; for the leſs rotten it is, the worſe it is. Alſo the ſcourings of common Sewers, and eſpecially thoſe

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through which much of mans urine doth paſs, is a moſt wonderful and beneficial manure for theſe grounds; ſo are alſo the ſcowring of ſinks and channels, which come from Kitchins and waſh-houſes, where great ſtore of brine and ſalt broath is ſhed, and other greaſie, fat, and putrified ſubſtances, as alſo abundance of ſope-ſuds, and buck-aſhes, and other ſope and lee-waſhings, than which, there is no better manure that can be uſed for theſe kind of grounds.

After your ground is thus perfectly made and manured, and that Wheat-ſeed time doth draw on, which (as before was ſhewed) is ever at the latter end of *September*, you ſhall then plow up your ground again in that manner as was ſhewed for the former earths, to wit, much deeper than before: for you are to underſtand, that this ground being dreſt, as is before declared, there will nothing remain of the furrows which were firſt plowed up but the aſhes, which being covered with ſand, lime, and manure, the earth will lie plain and level, ſo that of neceſſity you muſt raiſe up new furrows of new earth, which being done, you ſhall then with your hacks, cut all the new earth into very ſmall pieces, mixing them well with the other mould made of ſand, lime, manure and aſhes; then as was before ſaid, you ſhall harrow it to make the mixture ſo much the better, and the mould ſo much the finer: and then if it have been ſanded, you may ſow your ſeed-wheat ſimply of it ſelf, without any doubt of the plentiful increaſe thereof; but if it have not been ſanded, then as in the foregoing Chapter, you ſhall not only ſteep your Seed in brine (as before ſhewed) but alſo you ſhall mix your Seed with Bay-ſalt, and ſo ſowe into the ground; or if at the time of ſowing (after it is plowed, hackt, and harrowed) you beſtow either Pigeons-dung, or Pullens-dung, or Sheeps-dung upon the Land, it will be much better, and the Corn will give a much greater increaſe. Now as ſoon as you Land is ſown, you ſhall forthwith harrow it again, and cover the Seed very cloſe; then you ſhall clot it, ſmooth it, and ſleight it (as was before ſhewed.)

As touching the weeding and cleanſing of this earth after the Corn is ſprung up, you ſhall underſtand that there is great care to be had thereunto, for this ground is much ſubject unto weeds, Weeding.

and thoſe of the worſt kind: for although for the moſt part it will be free from all manner of ſoft and tender weeds, as thiſtles, cockle, darnel, ketlocks, docks, rape, and ſuch like herbal ſtuff, yet it is much ſubject to twitch-bryars, which grow at both ends, Ling, Wilde-time, and ſuch-like, any of which as ſoon as you ſhall ſee to appear, or peep above the earth, you ſhall preſently with your Nippers pull them up by the roots, and not ſuffer them in any wiſe to look a handful above the ground; for if you do, their hardneſs is ſo great, and their roots ſo large and faſt fixt into the mould, that you can by no means pull them away without great loſs and hurt to the grain, pulling up with them all ſuch roots of Corn, as ſhall be fixed near about them: for any other weak and ſuperfluous things which ſhall grow from the Land, you may with ordinary weeding hooks cut them away; as for long graſs, whether it be ſoft or ſedge, or any other ſuch-like ſtuff, you ſhall not ſtir it, but let it grow; for it keepeth warm the roots of your Corn, and giveth nouriſhment and increaſe thereunto. Now for the profit of this Soil thus ordered and husbanded, it is equal with any of the former, and will bear Wheat very plentifully for the ſpace of the three firſt years; good Barley the fourth year with the help of the ſheep-fold (as was before ſaid) and good Oats the fifth, ſixth, and ſeventh years; and very good ſmall Peaſe, the eighth year (for beans this Soyl will very hardly bear at all) and the ninth, tenth, and eleventh year it will bear very good meadow (though not altogether very fine pure graſs, yet very good feeding and wholſom graſs) or ſo good paſture as a man can reaſonably require for any holding Cattle whatſoever; nay, it will alſo indifferently well feed, and fat Cattle, though peradventure it requireth a little longer time than other finer ground will.

CHAP. VI.

Of the ordering, Tilling and Dreſſing of all plain ſimple barren Sands, bearing nothing but a ſhort moſſie graſs.

HAving thus (in as large manner as I hope ſhall be needful for any judicious or indifferent Reader) written of the Natures, Orderings, Plowings, and Dreſſings of all manner of barren

ren and unfruitful Clays, whether they be ſimple of themſelves, or elſe compounded with other earths, as Sands, Chalks, Gravels, and ſuch like; ſhewing by thoſe natural burthens which continually of their own accord they do produce (which indeed is the eaſieſt and ſafeſt way of knowledge) how to amend and better them, and bring them to that perfection of fruitfulneſs that the beſt earth ſhall but in a very ſmall degree exceed them, nay, nay hardly any thing at all, except in the ſaving of a little charge and ſome labour, without which nothing is to be obtained by the Husbandman, neither is this charge or labour thus beſtowed on theſe barren Grounds to be grutcht at by any honeſt mind, ſince the worſt crop of ten or eleven will make good his charge and toil with a reaſonable Intereſt; ſo that I make account, nine or ten years profits come into his Barns without purchaſe; for it is to be intended, that all theſe earths formerly ſpoken of, are not to be dreſt, or to put the Husbandman to any charge more than the firſt year of ten or eleven, for the ſecond year he ſhall as ſoon as he hath gathered his Wheat off, which will be in *Auguſt*, and finiſht other parts of his Harveſt, preſently put his Plow into the ſame Wheat-ground again, and plow it up, hack it, and harrow it, ſowe it, harrow it again, clod it, and weed it, as in the former year, and ſo conſequently of all the reſt of the years following; whereby you perceive that all labours and charges are ſaved more than once plowing and ſowing.

This then conſidered, it neceſſarily now followeth that I ſpeak of the bettering, and bringing into perfection of all manner of barren ſand Grounds, being ſimply of themſelves, without any mixture of other earths, except one and the ſame kind; as ſand with ſand, though peradventure the colours of the Sands may alter, as red with white, yellow with black, &c. which in as much as the whole ſubſtance is ſand without any contrary mixture, there it may well be called ſimple and not compound; and of theſe Sands, I purpoſe to treat, as formerly I did of the Clays; that is to ſay, by their outward faces and Characters, which are thoſe burthens and increaſes, which of their own proper nature, without any help or compulſion of any other, they produce and bring forth into the world.

And first of that naughty cold and barren Sand, which lying upon high, stony, and mountainous Rocky places, or else upon lower cold bleak Plains, subject to the North, and North-East winds and tempests, or bordering upon the Seas, doth not bring forth any thing but a short mossie grass, which the Sun maketh bitter, and the cold dews sulsome and unsavory in taste. If any man then be Master of such unprofitable and unfruitful earth, and desire to have it brought to goodness, and perfection, you shall first, at the beginning of the Spring, as about middle *April*, or earlier, with a strong Plow answerable to the Soil, yet somewhat less, both in Timbers and Irons, then that wherewith you plow your Clay ground, plow so much of that earth up as you may conveniently compass, to sowe and dress exactly, and perfectly; for to undertake more, were to make all unprofitable, and to cast away much labour and charge, without any profit. This ground you shall plough of an indifferent depth, though not so deep as the Clays, you shall lay the furrows, though flat, yet close one to another, without leaving any bulk between, but ploughing all very clean, yet not so very clean and close together, that you may lay the green swarth, to the new ploughed or quick earth; but rather turn one swarth against another, so as the furrows may lie, and no more but touch the edges one of another: This when you have done, you shall then with your hacks, cut and break all the earth so turned up into very small pieces, and not only the earth so turned up into very small pieces, but also other green swarth which was left unplowed; provided that before this labour of hacking, you let the ground lie certain days in the furrows, that one swarth heating and scalding the other, they may both equally rot and grow mellow together: which once perceived by the blackness thereof, you may then at your pleasure hack it, and cut it, as is before declared.

Plowing.

Objection. Now some may in this place object unto me, That this labour of hacking should be needless, in as much as all sand grounds whatsoever are out of their own nature so light, loose, and willing to dissever, that this toyl might very well and to good purpose be saved.

Answer. To this I answer, That true it is, most Sands in their own natures

tures are looſe and light, and willing to diſſever into fine mould without any extremity, eſpecially rich and fruitful Sands, whoſe predominant quality of warmth, giveth nouriſhment and increaſe: But theſe barren and cold Sands, in which is a certain flegmatique toughneſs, and moſt unwholſom drineſs, are of a clean contrary nature, and through the ſtony hardneſs thereof, they are as unapt to break and diſſever, as any Clay whatſoever: beſides, the ſwarth being of a tough moſſie ſubſtance, (which ever carrieth a hard ſtrong root anſwerable with the cold in which it is engendred) doth ſo conſtantly bind, fetter, and hold the mould together, that it is impoſſible for any harrow to break it in pieces, or to gather from it ſo much mould as may ſerve to cover the Corn, and give it root when it is ſown into the ſame: And therefore this work of hacking is neceſſary.

When therefore you have thus hackt your Land, and diſtributed the mould into many ſmall pieces, you ſhall then with all expedition Marle it; which foraſmuch as it is no general nor common practice in every part of this Kingdom, I will firſt tell you what Marle is, and then how to find it, dig it, and uſe it for your beſt behoof. Of Marling.

Marle, you ſhall then underſtand, is (according to the definition of Maſter *Bernard Paliſſy*) a natural, and yet an excellent Soil, being an enemy to all the weeds that ſpring up of themſelves, and giving a generative vertue to all ſeeds that are ſown upon the ground: or (for the plain Husbandmans underſtanding) it is a certain rich, ſtiff, and tough clay, of a glewy ſubſtance, and not fat or Oyly, as ſome ſuppoſe. This Marle is in quality cold and dry, and not hot (as ſome would have it) and it was earth before it came to be Marle, and being made Marle, yet it is but a Clay ground; all Chalk whatſoever was Marle before it was Chalk, and all manner of ſtones which are ſubject unto Calcination or burning, as Lime-ſtone, Flint, or the like, were firſt Marl before they were ſtones, & only hardned by accident, and ſo not poſſible to be diſſolved but by the fire; as for Marle it ſelf, when it is a little hardned, it is only diſſolved by froſts, and nothing elſe; and thence is the cauſe that Marle ever worketh better effect the ſecond year than the firſt. Additions.

This Marle hath been made ſo precious by ſome Writers, that

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it hath been accounted a fifth element, but of this curiosity I will not now dispute.

Touching the Complexions or Colours of Marle, there is some difference; for though all conclude there are four several colours in Marle, yet one saith, there is a White, a Gray, or Russet, a Black and Yellow; another saith, there is a Gray, a Blew, a Yellow, and a Red; and a third saith, there is a Red, and White, mixt like unto Porphery. And all these may well be reconciled, and the colours may alter according to the climate and strength of the Sun: So that by these Characters, the Colour, the toughness, and the loosness when it is dried, any man of judgment may easily know Marle, from any other earth whatsoever. This Marle is so rich in it self, and so excellent for continuance, that it will maintain and enrich barren grounds, the worst for ten years, some for a dozen, and some for thirty years; yet there is a great respect to be had in laying of this Marle upon the ground, that is to say, that you lay it neither too thick nor too thin, that you have it neither too much, nor too little; for any of these extremities are hurtful; and therefore hold a mean, and see there be an indifferent mixture between the Marle and the earth, on which it is laid.

For the general finding out of this Marle, there is no better way for readiness, and the saving of charges, than by a great Augur or Wimble of Iron, made to receive many bits, one longer than another, and so wresting one after another into the ground to draw out the earth, till you find you are come to the Marle, which perceived, and an assay taken, you may then dig at your pleasure.

Now for the places most likely where to find this Marle, it is commonly found in the lowest parts of high Countries, near Lakes and small Brooks, and in the high parts of low Countries, upon the knolls of small hills, or within the Cliffs of high Mountainous Banks, which bound great Rivers in: To conclude, you shall seldom find any of these barren Sands, but they are either verged about with Marle Grounds, or if you will bestow the labour to dig below the Sand, you shall not fail either to find Marle, or some Quarry of stone, or both; for in some places Marle lieth very deep, in other some places within

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a Spades graft of the upper ſwarth of the earth ; therefore it ſhall be good for you to make proof of all the moſt likely parts of your Ground to find out this Marle ; and as ſoon as you have found it out, you ſhall with Mattocks and Spades dig it up and carry it to your land, there laying it in big round heaps, and ſetting them within a yard or two one of another : thus when you have filled over all your Ground (which would be done with as great ſpeed as might be ; for the antient cuſtom of this Kingdom was, when any man went about to Marle his ground; all his Tenants, Neighbours and Friends would come and help him to haſten on the work) you ſhall then ſpread all thoſe heaps, and mixing the Clay well with the Sand, you ſhall lay all ſmooth and level together ; and herein is to be obſerved, that if the land you thus Marle ſhall lie againſt the ſide of any great Hill or Mountain, whereby there will be much deſcent in the ground ; then you ſhall (by all means) lay double as much Marle, Sand, or other compoſt on the top of the Hill as on the bottom, becauſe the rain and ſhowrs which ſhall fall, will ever waſh the fatneſs of the earth down to the loweſt parts thereof.

Now in the laying of your Marle, you are to hold this obſervation, That if you lay it on hard and binding grounds, then you are to lay it in the beginning of Winter : but if on grounds of contrary nature, then it muſt be laid in the Spring, or Summer. Again, you ſhall obſerve, that if you cannot get any perfect and rich Marle, if then you can get of that earth which is called Fullers-earth, and where the one is not, commonly ever the other is, then you may uſe it in the ſame manner as you ſhould Marle, and it is found to be very near as profitable.

When your ground is thus Marled (if you be near to the Sea-ſide) you ſhall then alſo ſand it with ſalt Sea-ſand, in ſuch ſort as was formerly declared, only you may forbear to lay altogether ſo much upon this Sand ground as you did on the Clay ground, becauſe an half part is fully ſufficient. If you cannot come by this Salt-ſand, then inſtead thereof, you ſhall take Chalk, if any be to be had near you, and that you may lay in more plentiful manner than the Sand ; and albeit it is ſaid, that

Additions. Obſervations.

Of Chalk and the uſe.

that Chalk is a wearier out of the ground, and maketh a rich father, yet a poor ſon, in this Soil it doth not ſo hold, for as it fretteth and waſteth away the goodneſs that is in the Clay grounds, ſo it comforteth and much ſtrengtheneth the ſand-earths: and this Chalk you ſhall lay in the ſame manner as you did your Marl, and in the ſame manner ſpread it and level it; which done, you ſhall then Lime it, as was before ſhewed in the Clay grounds; yet not ſo abundantly, becauſe alſo a half part will be ſufficient: after your Liming, you ſhall then manure it with the beſt manure you have, whether it be dung of Cattle, Horſe, Sheep, Goats, Straw, or other rubbiſh; and that being done, and Seed-time draweth on, you ſhall then plow up your ground again, mixing the new quick earth and the former Soyls ſo well together, that there may be little diſtinguiſhment between them: then you ſhall hack it again, then harrow it; and laſtly ſowe it with good, ſound, and perfect Seed: and of Seeds, though Wheat will very well grow upon this earth, yet Rye is the more natural and certain in the increaſe; yet according to the ſtrength of the ground, you may uſe your diſcretion, obſerving that if you ſowe Wheat, then to ſteep it before in brine or ſalt Sea-water, as was before deſcribed; but if you ſowe Rye, then you ſhall ſowe it ſimply without any helps, except it be Pigeons-dung, or Bay-ſalt ſimply of it ſelf, in ſuch manner as hath been before declared, either ſowing the ſalt with the Corn, or before the Corn, as ſhall ſeem beſt in your own diſcretion.

After your ſeed is ſown, you ſhall then harrow it again, clot it, ſmooth it, and ſleight it, as before is ſhewed in the ſecond Chapter; which done (after the Corn is ſhot above the earth) you ſhall then look to the weeding of it, being ſomewhat a little too much ſubject to certain particular Weeds, as are Hare-bottles, wild Cheſs-bolls, Gypſie-flowers, and ſuch-like, any of which, when you ſee them ſprung up, you ſhall immediately cut them away cloſe by the roots; as for tearing their roots out of the ground with your Nippers, it is not much material, for the cutting of them is ſufficient, & they will hardly ever again grow to do you any hinderance; many other weeds there may grow amongſt theſe, which are alſo to be cut away, but theſe are the principal, and of moſt note; whereof as ſoon as you have cleanſed

ſed your lands of theſe and the reſt, you ſhall then refer the further increaſe of your profit unto Gods Providence.

Laſtly, you ſhall underſtand that this ground being thus plowed, dreſt, and ordered, will without any more dreſſing, but once plowing and ſowing, every year bear you good Wheat or good Rye three years together; then good Barley the fourth year; good Oats, the fifth, ſixth, and ſeventh years; excellent good Lupins the eighth year, and very good Meadow or Paſture three or four years after, and then it ſhall be neceſſary to dreſs it again in ſuch manner as was before deſcribed. The profits.

CHAP. VII.

Of the Plowing, Tilling, Ordering, and Inriching of all barren Sand, which are laden and over-run with Braken, Fern, or Heath.

NExt unto this plain, cold, barren Sand, which beareth no other burthen but a ſhort moſſie Graſs, I will place that Sand which is laden and over-run with Braken, Fern, or Heath, as being by many degrees more barren than the former, both in reſpect that it is more looſe and leſs ſubſtantial, as alſo in that it is more dry and harſh, and altogether without nutriment, more than an extreme ſterile coldneſs, as appeareth by the burthen it bringeth forth, which is Braken or Fern, a hard, tough, tough weed, good for nothing but to burn, or elſe to litter ſtore Beaſts withal, for the breeding of Manure; or if you ſtrow it in the High-ways where many Travellers paſs, it will alſo there turn to good reaſonable compoſt.

Of this kind of ground, if you be Maſter, and would reduce it unto fertility and goodneſs, you ſhall firſt, whether the braken be tall and high (as I have ſeen ſome as high as a man on Horſe-back) or ſhort, and low (and indeed moſt commonly theſe barren earths are, for tall Fern or Braken ſhews ſome ſtrength in the ground) you ſhall with ſythes firſt mow it down in the month of *May*, then wither it and dry it upon the ground, and after ſpread it as thin as you can over all the earth you intend to plow; which done, you ſhall bring your plow and begin to plow the ground after this order: firſt you ſhall turn up your furrow, Of deſtroying Braken.

and lay flat to the ground, green-ſwarth againſt green ſwarth, then look how broad your furrow is ſo turned up, or the ground ſo covered; and juſt ſo much ground you ſhall leave unplowed between furrow and furrow, ſo that your land may lie a furrow and a green balk, till you have gone over all the ground; then you ſhall take a paring-ſhovel of Iron, and pare up the green ſwarth of all the balks between the furrows at leaſt two inches thick, and into pieces of two or three foot long, and with theſe pieces of earth, and the dry Fern which is pared up with them, you ſhall make little round hollow bait-hills, as in the third or fourth Chapters, and theſe hills ſhall be ſet thick and cloſe over all the ground, and ſo ſet it on fire and burn it; then when the fire is extinct, and the hills cold, you ſhall firſt with your hacks cut in pieces, all the furrow that were formerly turned up, and then break down the burnt hills, and mix the aſhes and earth with the other mould very well together; which done, you ſhall then with all ſpeed marle this earth as ſufficiently as poſſibly may be, not ſcanting it of Marle, but beſtowing it very plentiful upon the ſame; which done, you ſhall then plough it over again, and plowing it exceeding well, not leaving any ground whatſoever untorn up with the plow; for you ſhall underſtand, that the reaſon of leaving the former balks, was, that at this ſecond plowing after the Marle was ſpread upon the ground, the new, quick, and unſtirred freſh earth might as well be ſtirred up to mix with the Marle, as the other dead earth and aſhes formerly received, whereby a freſh comfort ſhould be brought to the ground, and an equal mixture without too much drineſs, and this ſecond Ardor or Plowing would begin about the latter end of *June*.

Of Marle.

Sanding and Liming.

After your ground hath been thus marled, and the ſecond time plowed, you ſhall then ſand it with ſalt Sea-ſand, Lime it, and manure it, as was declared in the foregoing Chapter: and of all Manures for this Soil, there is not any ſo exceeding good as ſheeps-manure, which, although of the Husbandman it be eſteemed a Manure but for one year, yet by experience in this ground it hapneth otherwiſe, and is as durable, and as long laſting a compoſt as any that can be uſed: and beſides, it is a great deſtroyer of Thiſtles, to which this ground is very much ſubject, becauſe

cauſe upon the alteration of the ground the Fern is alſo naturally apt to alter into Thiſtle, as we daily ſee.

When your ground is thus dreſt, and well ordered, and the Seed-time cometh on, you ſhall then plough it again in ſuch manner as you did the ſecond time, that is to ſay, very deep, Cle, and after the manner of good Husbandry, without any reſt, balks or other diſorders; then ſhall you hack it very well, then harrow it, and then ſowe it, but by mine advice, in any caſe, I would not have you to beſtow any Wheat upon this Soil, (except it be two or three buſhels on the beſt part thereof, for experience-ſake, or proviſion for your houſhold) for it is a great enemy unto Wheat, and more than the marl: it hath no nouriſhment in it for the ſame, becauſe all that cometh from the ſalt-Sand, Lime, and Manure, is little enough to take away the natural ſterility of the earth it ſelf, and give it ſtrength to bear Rye, which it will do very plentifully; and therefore I would wiſh you for the firſt three years only to ſowe the beſt Rye you can get into this ground; the fourth year, to ſowe Barley; the fifth, ſixth, and ſeventh, Oats; and of Oats, the black Oat is the beſt for this ground, maketh the beſt and kindlieſt Oat-meal, and feedeth Horſe or Cattle the ſoundeſt; as alſo it is of the hardeſt conſtitution, and endureth either cold or drineſs much better than the white Oat, the cut Oat, or any Oat whatſoever; the eighth year you ſhall only ſowe Lupins, or Fetches; and three years after you ſhall let it lie for Graſs, and then dreſs it again as before-ſaid; for it is to be underſtood, that in all the following years (after the firſt year) you ſhall beſtow no labour upon this ground, more than plowing, ſowing, hacking, and harrowing at Seed-time only. Plowing and Sowing.

But to proceed to the orderly labour of this ground, after you have ſown your Rye, you ſhall then harrow it again, clot it, ſmooth it, and ſleight it, as was before ſhewed in the ſecond Chapter of this Book. And although a man would imagine that the ſandy looſneſs of this Soil, would not need much clotting or ſleighting of the Earth, yet by reaſon of the mixture thereof with the Marle and Manure, it will ſo ho'd and cleave together, that it will ask good ſtrong labour to looſen it, and lay it ſo hollow and ſmooth, as in ſight it ſhould be. Labour after Sowing.

Weeding.

Touching the Weeds which are moſt ſubject to this Soil, they are Thiſtles and young Brakes, or Ferns, which will grow up within the Corn, which, before they riſe ſo high as the Corn, and even as it were at the firſt appearing, you muſt with your woodden Nippers pull up by the roots, and after take up and lay in ſome convenient place where they may wither and rot, and ſo turn to good Manure.

CHAP. VIII.

Of the Plowing, Tilling, Ordering, and Enriching of all barren Sands, which are laden and over run with Twitch, or Wild Bryar.

HAving written ſufficiently of this hard and barren, waſte, wild, ſandy ground, which is over-run with Braken, Fern, Heath, and ſuch like. I will now proceed, and unto it joyn another Sand which is much more barren, and that is the Sand that bringeth forth nothing but wild Twitch, Bryars, Thornbuſh, and ſuch like under-growth, of young miſliking wood, which never would riſe or come to profit, the bitter cold drineſs of the earth wherein it groweth, and the ſharp ſtorms to which the Clime is continually ſubject both day and night, blaſting it in ſuch manner, that nothing appeareth but ſtarved, withered, and utterly unprofitable burthens, good for nothing but the fire, and that in a very ſimple ſort. Such grounds if you be Maſter of, and would reduce it to profit and fruitfulneſs, you ſhall firſt with hooks, or axes cut up the upper-growth thereof, that is, the buſhes, young Trees, and ſuch like; then you ſhall alſo ſtub up the Roots, not leaving any part of them behind in the earth, carrying away both home to your houſe to be employed either for fuel, or the mending of the hedges, or ſuch like, as you ſhall have occaſion; this done, you ſhall take a pair of ſtrong Iron harrows, and with them you ſhall harrow over all the earth, tearing up all the Twitch, Bryars, and rough graſs ſo by the roots, that not any part but the bare earth may be ſeen; and when your Harrows are cloyed, you ſhall unlade them in ſeveral places of the ground, laying all ſuch rubbiſh of weeds, and other ſtuff which the Harrows ſhall gather up in a little round

Deſtroying of Twitch and Bryar.

round hill close up together, that they may sweat, wither and dry; then spreading them abroad, and mixing them well with dry straw, burn them all over the ground, leaving no part of the weeds or the grass unconsumed, then, without beating in of the ashes, you shall presently plow the ground all over very clean as may be, laying the furrows as close as you can to one another, and leaving no earth untoucht or untorn up with the plough; which done, you shall immediately hack it into small pieces, and as you hack it, you shall have idle Boys to go by the hackers, to gather away all the roots which they shall loosen or break from the mould, and laying them on heaps on the worst part of the ground, they shall there burn them, and spread the ashes thereon; after your ground is thus harrowed, plowed and hackt, you shall then muck it, as was formerly shewed in the sixth Chapter; then shall you sand it, lime it, and manure it as before-said.

Manures.

Now of Manures, which are most proper for this Soil, you shall understand, that either Oxe, or Horse-manure, rotten straw, or the scouring of Yards is very good, provided that with any of these Manures, or all these Manures, you mix the broad-leaved weeds, and other green weeds, which do grow in Ditches, Brooks, Ponds, or Lakes, under Willow-trees, which with an Iron Rake, Drag, or such like Instrument, you may easily draw upon the Banks, and so carry it to your Land, and there mingle it with the other manure, and so let it rot in the ground; this Manure thus mixed is of all other most excellent for this Soil, both by the experience of the Antients who have left it unto memory, as also by daily practise now used in sundry parts of this Kingdom, as well because of the temperate coolness thereof, which in a kindly manner asswages the lime and sand, as also through moisture, which distilling through those warm Soils, doth quicken the cold starved earth, and giveth a wonderful encrease to the Seed, that shall be thrown into the same.

Harrowing, and other labours.

After your ground is thus sufficiently dreſt with these Soils and Manures, you shall then plow it again the second time, which would be after *Michaelmas*; after the plowing you shall then hack it again, and be sure to mix the earth and the manures very well together, then you shall break it in gentle manner with

with your Harrows, and then ſowe it; which done, you ſhall harrow it much more painfully, and not leaving any clots or hard earth unbroken that the Harrow can pull in pieces: as touching the Seed, which is fitteſt for this earth, it is the ſame that is ſpoken of in the next foregoing Chapter; as namely, the beſt Rye, or the beſt Maſlin, which is Rye and Wheat equally mixt together; or if there be two parts Rye, and but one Wheat, the Seed will be ſo much the more certain and ſure holding; and this Seed you may ſowe on this ground shree years together; then Barley, then Oats, and ſo forth, as is formerly writ of the grounds foregoing. After your ground is ſown and harrowed, you ſhall then clot it, ſleight it, and ſmooth it as you did the other ground before; and then laſtly with your back Harrows (that is, with a pair of Harrows, the teeth turned upward from the ground, and the back of the Harrow next unto the ground) you ſhall run over all the ground, and gather from the ſame all the looſe Graſs, Twitch, or other Weeds that ſhall any ways be raiſed up, and the ſame ſo gathered you ſhall lay at the Lands ends in heaps, either to rot for manure, or elſe at the time of the year to be burnt for aſhes, and ſprinkled on the earth the next Seed year.

Laſtly, touching the weeding of this Soil, you ſhall underſtand the Weeds which are moſt incident thereunto, are all the ſame you firſt went about to deſtroy; as namely, Twitch, rough wild Graſs, and young woody under-growth, beſides, Thiſtles, Hare-bottles, and Gyplie-flowers; therefore you ſhall have a great care at the firſt appearance of the Corn, to ſee what Weeds ariſe with it (for theſe weeds are ever fully as haſty as the Corn) and as ſoon as you ſee them appear, both your ſelf and your people with your hand ſhall pull them up by the roots, and ſo weed your land as you would weed a Garden, or Woad ground. Now if at this firſt weeding (which will be at the latter Spring, commonly called *Michaelmas*, or the Winter Spring) you happen to omit and let ſome weeds paſs your hands unpulled up (which very well may chance in ſo great a work) you ſhall then the Spring next following (ſeeing them as high, or perad venture higher than the Corn) with your woodden nippers pull them up by the roots from the ground, and ſo caſt them away.

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As touching the cutting them up close by the ground with ordinary weed-hooks, I do in no sort allow it; for these kind of weeds are so apt to grow, and also so swift in growth, that if you cut them never so close in the Spring, yet they will again over-mount the Corn before Harvest, and by reason of their greatness, toughness, and much hardness, choak and slay much Corn that shall grow about them; and therefore by all means you shall pull these weeds up by the roots whilst they are tender (if possible you can) or otherwise in their strongest growth, sith their sufferance breedeth great loss and destruction.

CHAP. IX.

Of their Plowing, Tilling, Ordering, and Enriching of all barren Sands, which are over-run with Moors, or moorish stinking long Grass.

UNto these foregoing barren Sands, of which I have already written, I will lastly joyn this last barren sand, being of all earths, whether Clay or Sand, the most barren. And that is that filthy, black, mooriſh Sand which beareth nothing but stinking putrified Grass or Moss, or Moss and Grass mixed together, to which not any Beast or Cattle, how coursly or hardly bred soever, will at any time lay their mouths; and this kind of ground also is very much subject to marshes and quagmires, of which that which is covered with Moss or Grass, is the worst, and that which is tufted above with Rushes, the best, and soonest reduced unto goodness: In brief, all these kind of grounds generally are extremely moist and cold, the superabundance whereof is the occasion of the infinite sterility and barrenness of the same.

And therefore he that is Master of such unprofitable Earth, and would have it brought to some profit or goodness, shall first consider the scituation of the Ground, as whether it lie high or low; for some of these marish grounds lie low in the Valleys, some on the sides of Hills, and some on the tops of Mountains: then, whether the much moistness thereof be fed by River, Lake, or Spring, whose veins not having currant passage through, or upon the earth, spreads lookingly over all

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the face thereof, and ſo rotting the mould with too much wet, makes it not only unpaſſable, but alſo utterly unprofitable for any good burthen.

Grounds for Fiſh-ponds.

Now if you find that this mariſh Earth lie in the bottom of low Valleys, as it were guarded about with Hill, or higher grounds, ſo that beſides the feeding of certain Springs, Lakes, or Rivers, every ſhower of rain or falling of water from higher grounds bringeth to theſe an extraordinary moiſture to maintain the rottenneſs, in this caſe this ground is paſt cure for graſs or Corn, and would only be converted, and made into a fiſh-pond, for the breeding and feeding of Fiſh, being a thing no leſs profitable to the Husbandman for keeping his houſe, and furniſhing the Markets, than the beſt Corn-lands he hath; and therefore when he maketh any ſuch Pond, he ſhall firſt raiſe up the head thereof in the narroweſt part of the ground, and this head, by driving in of ſtakes, and piles of tough and hard wood, as Elm, Oak, and ſuch like, and by ramming in of the earth hard between them, and ſadding them ſo faſt that the mould can by no means be worn down, or undermined with the water, he ſhall bring it to as firm earth as is poſſible, and in the midſt of this head he ſhall place a ſluce or flood-gate made of ſound and clean Oak timber, and plancks, through which at any time to drain the Pond when occaſion ſhall ſerve; and this done, you ſhall dig the Pond of ſuch depth, as the earth conveniently will bear, and caſting the earth upon either ſide, you ſhall make the Banks as large and ſtrong as the ground requireth; then if any Spring which did before feed the earth be left out of the compaſs of the Pond (becauſe it lieth too high to be brought in) then ſhall you by drawing gutters or drains from the Spring down to the pond, bring all the waters of the ſprings into the Pond, and ſo continually feed it with freſh and ſweet water. Then ſtoring it with fiſh of beſt eſteem, as *Carp*, *Tench*, *Beam*, *Pearch*, and ſuch like, and keeping it from weeds, filth and vermine, there is no doubt of the daily profit.

But if this mariſh and low ground, though it lie low, and have many ſprings falling upon it, yet it lieth not ſo extreme low but that there is ſome River or dry Ditches bordering upon it, which lie in a little lower deſcent, ſo that except in caſe of inun-

inundation the river and ditches are free from the moiſture of this ground, but where there is any over-flowing of waters, there this marſh ground muſt needs be drowned; in this caſe, this ground can hardly be made for Corn, becauſe every over-flow putteth the Grain in danger, yet may it be well converted to excellent paſture or meadow, by finding out the heads of the Springs, and by opening and cleanſing them, and then drawing from thoſe cleanſed heads, narrow drains or furrows, through which the waters may paſs to the neighbours ditches, and ſo be conveyed down to the low Rivers: leaving all the reſt of the ground dry, and ſuffering no moiſtures to paſs, but what goeth through theſe ſmall deep Channels; then as ſoon as Summer commeth, and the ground begins to harden, if you ſee any of the water ſtand in any part of the ground, you ſhall forthwith mend the drain, and help the water to paſs away; which done, (as the ground hardneth) you ſhall with hacks and ſpades lay the ſwarth ſmooth and plain, and as early in the year, as you can conveniently, you ſhall ſow upon the ground good ſtore of Hay-ſeeds, and if alſo you do manure it with the rotten ſtaddles or bottoms of hay-ſtacks, it will be much the better, and this ſtaddle you ſhall not ſpread very thick, but rather of a reaſonable thinneſs, that it may the ſooner rot and conſume upon the ſame.

Draining of wet grounds.

But if this marſh and filthy ground do not lye ſo low as theſe low valleys, but rather againſt the tops of hills; you ſhall then, firſt open the heads of all the ſprings you can find, and by ſeveral drains or ſluces, draw all the water into one drain, and ſo carry it away into ſome neighbouring ditch and valley; and theſe drains you ſhall make of a good depth, as at leaſt two foot, or 2 foot and a half, or more, if need require, and then croſs-wiſe every way overthwart the ground, you ſhall draw more ſhallow furrows, all which ſhall fall into the former deep drains, and ſo make the ground as conſtant, and firm as may be: then having an intent to imploy it for corn, you ſhall bring your Plow into the ground, being a very ſtrong one, and not much differing in Timber-work, or Irons from that which turneth up the Clay-grounds, and laying before the Plow long waddes, or rouls of the ſtraw of Lupins, Peaſe, or elſe Fetches, (but Lupins is

the beſt) you ſhall turn the furrows of the earth with the plow upon the wades, and ſo cover or bury them in the mould, and thus do unto every furrow, or at leaſt unto moſt of the furrows you turn up, and ſo let it lye a little time to rot, as by the ſpace of a fortnight or three weeks, in which ſpace, if the qround receive not rain and moiſture enough to rot the ſtraw thus formerly buried, you ſhall then by ſtopping the drains, making the Springs over-flow, gently waſh the ground all over and no more, and then preſently drain it again; which done, as ſoon as the earth is dry, you ſhall hack it, and break it into ſmall pieces, and then you ſhall alſo ſand it, lime it, and manure it.

And laſtly, you ſhall Marl it, but if no ſalt ſand be to be had, then inſtead of it you ſhall chalk it, yet of all the reſt you ſhall take the leaſt part of chalk.

This done, about the latter end of *July* you ſhall plow up the ground again with ſomewhat a better and deeper ſtitch than you did before, that if any of the ſtraw be unrotted, or unconſumed, it may again be raiſed up with the new moyſt earth, and ſo made to waſte more ſpeedily; and if at this ſecond carrying you do ſee any great hard clots to riſe, then with your hacks you ſhall break thoſe hard clots in pieces, laying the Land clean without clots, weeds, or any other annoyance, and ſo let it reſt till *October*, at which time you ſhall plough it over again, hack it, harrow it, and then ſow it with the beſt Seed-wheat; for this ſoyl thus dreſt and manured, albeit it be of all other the moſt barren, yet by reaſon of this moyſture, which at pleaſure may be put to it, or taken from it, and the mixture of theſe comfortable ſoyles and compoſts, it is made as good and fruitful as any earth whatſoever, and will bear Wheat abundantly for the ſpace of three years together, then good Barley the fourth year, with a little help of a Sheep-fold, or Sheeps manure: then Rye the fifth year; Oats the ſixth, the ſeventh and eighth years; ſmall Peaſe the ninth year; good meadow or paſture three years following, and then to be new dreſt again, as beforeſaid.

Harrowing. Now as ſoon as your Seed-Wheat is ſown, you ſhall then harrow the ground again, and be ſure to cover the Wheat both deep and cloſe; as for the clots, which ſhall ariſe from this ſoyl,

it ſhall not matter whether you break them or no, for by reaſon of their moiſture, they will be plyant and eaſie for the Wheat to paſs through, ſo that you ſhall not care how rough your land lye, ſo it lye clean, and the Corn well covered; but for all other ſeeds, you ſhall break the clots to duſt, and lay the land as ſmooth as may be.

Now for the weeding of this ſoyl, you will not be much troubled therewith, becauſe this ground naturally of its own accord putteth forth no weeds, more than thoſe which are ingendred by the new made fruitfulneſs thereof, and thoſe weeds for the moſt part are a kind of ſmall ſedge, or hollow reed; any of which if you ſee appear, or with them any other kind of weed, you ſhall at the firſt appearance, either pull them up by the roots with your woodden nippers, or elſe cut them cloſe by the ground with your weed-hooks. Weeding.

CHAP. X.

A general way for the enriching of any poor arable ground, either Clay or Sand, with leſs charge than formerly.

IF the former demonſtrations and inſtructions which I have ☜ ſhewed thee, appear neither too difficult, or too coſtly (for now I ſpeak to thee plain, ſimple, poor Husbandman) and yet thou art maſter of none but barren earth, then thou ſhalt by thine own induſtry, or the induſtry of thy Children, Servants, and ſuch like, or by contracting with Taylors, Botchers, or any poor people that will deſerve a penny, gather up, get or buy all the rags, ſhreds, old baſe pieces of woollen cloth whatſoever, which are onely caſt, and fit for nothing but the Dung-hill, and of theſe thou canſt compaſs but a ſackfull, or a ſackfull and a half, it is ſufficient for the dreſſing of an acre of arable ground. Theſe ſhreds and rags (torn ſmall) or hackt and hewed into ſmall pieces or bits, thou ſhalt thinly ſpread over the land before fallowing time, then coming to fallow, plough them all into the ground, & be ſure to cover them, then give your land the reſt of its ardors, as ſtirring, ſoyling, ridging, &c. in their due ſeaſons, and after an husbandly manner: then when you come to ſow it, you ſhall take Raggs of woollen cloth.

Steeping of ſeed corn.

the ſlimie thick water which commeth from dung-hills, or for want thereof, water in which Cow-dung hath been ſteeped, and therein you ſhall ſteep your ſeed-corn; that is to ſay, if it be barley, you ſhall ſteep it for the ſpace of thirty ſix hours, or thereabouts; if it be Wheat, but eighteen hours; and if it be Peaſe, but twelve hours; for Rye, or Oats, not at all: and the ſeed thus ſteeped, you ſhall ſow it according to good Husbandry, and there is no doubt of wonderfull increaſe.

Or any pulſe.

There be others which take the Seed-corn, and ſteeping it in good ſtore of Cow-dung, and water, ſtir all together for an hour in the morning, and an hour at night, and then being ſetled, drain the water from the ſeed and the dung, and the next morning ſow the corn and the dung both together on the land, being ſure not to ſcant the Land of Seed, and no doubt the increaſe will be wonderfull.

Now if this cannot be conveniently done, or that you want dung, if then you take ordinary water, and therein ſteep your ſeed, it is good alſo, and eſpecially for barley, and is approved by daily experience.

Shavings of Horn.

But now me-thinks, I hear the poor man ſay, that here is but one acre dreſt, and that is a ſmall proportion; to this I anſwer, If thou beeſt able but to dreſs one acre with theſe woollen raggs, thou ſhalt then ſearch among the Horners, Tanners, Lanthorn-makers, and ſuch like, and get all the waſt ſhavings of horn which thou canſt poſſibly compaſs, as before of the rags, ſo of theſe a ſack and a half, or two ſacks will dreſs an acre: theſe ſhavings (which are indeed good for no other uſe) you ſhall ſcatter upon the land as you did the rags, then plow them in after the ſame manner, ſo order the ground, ſo ſow, and in the ſame manner ſteep the ſeed, and queſtionleſs the increaſe will be wonderfull great: Theſe manures will laſt five years without any renewing. Now if of theſe you cannot get ſufficient to trim all your ground, you ſhall then deal with Butchers, Sowſe-women, Slaughter-men, Scullions, and the like; and from theſe you ſhall get all the hoofs you can, either of Oxe, Cow, or Bull, Calf, Sheep, Lamb, Deer, Goates, or any thing that cheweth the cud, and which indeed, if not for this uſe, are otherwiſe utterly caſt away to the dunghill, and deſpiſed: And theſe hoofs

Hoofs of cattell.

you

you ſhall cut and hew into ſmall pieces, and ſcatter thick upon your land at fallowing time, then plow them in, as foreſaid, and do in all points as with the other manures already recited, and ſo ſteep your ſeed, and there cannot be a greater inricher of arable ground whatſoever.

Now if all theſe will not yet compoſt your land, you ſhall then ſee what ſope-aſhes you can get, or buy, for of all manures there is none more excellent, for beſides, it giveth an exceeding ſtrength and fatneſs to the Land; it alſo killeth all manner of weeds, great and ſmall, as Broom, Gorſe, Whinnes, and the like, and it killeth all manner of Worms, & venemous creeping things; it is excellent for Woad, & the ground renewed yearly therewith, may be ſown continually: Theſe ſope-aſhes muſt be laid on the Land after fallowing, and then ſtirred in; two load thereof will ſerve to dreſs an acre: when it is fit for ſeed, the ſeed muſt be ſteept as aforeſaid, and then ſown, and the increaſe will quit the charge manifold. Theſe ſope-aſhes are alſo excellent good for Hemp, and Flax, being thinly ſown upon the Land, after it is plowed, and immediately before the Seed be ſown: but if you have more Land to dreſs, then you muſt make uſe of your own ordinary manure, as is Oxe-dung, Horſe-dung, and the like, which that you may make richer and ſtronger than otherwiſe of its own nature it would be, you ſhall cauſe continually to be thrown upon it, all your powdred beef broth, and all other ſalt broths or brines, which ſhall grow or breed in your houſe; alſo all manner of ſoap ſudds, or other ſudds, and waſhings, which ſhall proceed from the Laundery, and this will ſo ſtrengthen and enrich your manure, that every load ſhall be worth five of that which wanteth this help. There be divers other manures, which do wonderfully enrich and fatten all manner of barren grounds, as namely, the hair of beaſts hides, (which for the moſt part, Tanners and Glovers do caſt away) this thinly ſpread on the Land, and plowed in, brings every year a fruitfull crop. Again, if Braken, or Fern be layed a foot thick upon the earth, and then a layer of earth upon it, then another layer of braken, and a layer of earth upon it, then another layer of braken, and another layer of earth, and ſo layer upon layer, till the heap be as bigg as you intend it, and ſo left to rot all the Winter following, there cannot be a better

Of Woad.

The enriching of ordinary manure.

The hairs of beaſts hides.

Of braken.

ma-

manure for any arable ground; for you ſhall underſtand, that the earth will ſo rot the braken, and the braken ſo ſoak into the earth, that they will become both one rich ſubſtance. And herein you ſhall note, that whenſoever you would have any ſubſtance (of what condition ſoever) quickly to rot, and turn to manure, that the only way is, to mix it with earth, and that will in ſhort ſpace bring it to rottenneſs. Now this braken and earth thus rotted, you ſhall lay upon your land as you do your ordinary dung of Cattel, and then ſow your ſeed being ſteept as aforeſaid,

To rot dung quickly.

Of Malt-duſt.

Next, your Malt-duſt, which is the ſprout, come, ſmytham, and their excrements of the Malt, as an excellent manure for arable land, allowing three quarters thereof for an acre, and ſtrowing it upon the land after it is plowed, and ready to be ſown.

Of Rotten Pilchers and garbage.

There is another manure which albeit it is not plentifull every where, yet in ſome places it is, and not inferior to any manure before ſpoken of, and that is your rotten Pilchers after the oyl is taken from them, & the carcaſſes caſt to the dungill, this laid on the land, and plowed in, bringeth Corn in great abundance; and no leſs doth the carcaſſes, and garbage of all kind of fiſh whatſoever, eſpecially of ſea-fiſh.

Of blood of-ſals.

Laſtly, the blood entralls, and offall of any beaſt, is an excellent manure of any kind of grain, plant, ot tree, but eſpecially for the Vine, for to it there is no nouriſhment of greater force or efficacy: alſo, if this blood be tempered with lime, it is exceeding comfortable for grain, and deſtroyeth worms, and other creeping things, which hurt Corn, only it muſt not be applyed preſently, but ſuffered for a little time to rot, leſt the too much heat thereof might ſcorch and do hurt to the root of the Corn: this manure is to be laid on the earth when you ſow it, & ſow the ſeed, and it harrowed or plowed in together; which done, after the order of good workmanſhip, there is no doubt of the encreaſe.

CHAP.

CHAP. II.

How to Enrich for Corn, any barren, rough, wooddy ground, being newly ſtubbed up.

IF you have any barren wooddy ground, which is newly ſtubbed up, and that you would convert it to arable, you ſhall then take a great quantity of the underwood, or worſt bruſh wood which was cut from the ſame, and in the moſt convenient place in the field, as in the midſt, or near thereabout, you ſhall frame it into a broad hollow pile, and then cover it all over with great ſodds of earth; which done, ſet fire on it, and leave no part thereof (either wood or earth) unburnt, then take thoſe aſhes and ſpread them all over the field, ſo far forth as you mean to plough up, then with a good ſtrong plough fallow the ground as deep as you can, and ſo let it reſt till it be almoſt *May*; then take either Fern, Stubble, Straw, Heath, Furrs, Sedge, bean ſtalks, or any other waſt growth, take I ſay, either any one, or more of theſe, or altogether, as you ſtand poſſeſt of them, and burn them to aſhes, and therewith cover your land the ſecond time, and then in ſummer ſtirr it within a Month, after ſoyl it, then at the beginning of *October*, or a little before, plough it again, and ſow it with Rye the firſt crop, and you ſhall ſee the increaſe will be very plentifull; the next year you may ſow it with Wheat, the third year with Barley, the fourth year with Peaſe, Lupins, Fetches, or any other pulſe, and then begin with Wheat again; for it is credibly ſaid, that this manner of dreſſing theſe barren, wooddy grounds, ſhall maintain and keep the earth in good heart, and ſtrength in the worſt places, for the ſpace of four years, in that which is in any thing reaſonable for the ſpace of ſix years, and where there is any ſmall touch of fertility, for the ſpace of ſixteen years; of which there are daily experiences in *France*, about the Forreſt of *Arden*, and ſome with us here in *England*, in many wooddy places.

Wood aſhes.

Aſhes of Fern. Straw, &c.

CHAP.

CHAP. XII.

The manner of reducing and bringing into their first perfection all sorts of grounds, which have been over-flowed, or spoiled by salt-water, or the Sea-breach, either arable or pasture, as also the enriching, or bettering of the same.

The difficulty of this labour.

THere is nothiug more hard or difficult in all the art of husban dry, then this point of which I am now to intreat; as namely, the reducing and bringing unto their first perfection all sorts of grounds, which have been over-flowed, or else spoiled by the Sea-breach, and bringing in of too great abundance of salt-water, which to some men of little experience, and free from those dangerous troubles, may appear a matter very sleight, and the wound most easie and curable; and the rather, because in all my former relations, and demonstrations, touching the bettering of ever several sort of ground, I do apply, as one of my chiefest ingredients, or simples, by which to cure Barrenness, Salt-Sand, salt-weeds, salt-water, salt-brine, Ashes, Lime, Chalk, and many other things of salt nature, as indeed all the manures and marles whatsoever, must either have a salt quality in them, or they cannot produce fruitfulness, so that to argue simply from natural reason; If salt be the occasion of fruitfulness, and increase, then there cannot be much hurt done by these over-flowes of the salt-wrter, that it should rather add a fattening and enriching to the ground, then any way to impoverish it, and make it incapable of growth or burthen. But experience, (which is the best Mistress) shews us the contrary, and there is nothing more noisome and pestilent to the earth, then the super-abundance, and too great excess of saltness; for according to our old Proverb, of *omne nimium*, that too much of every thing is vitious, as we see in the state of man's body, that your strongest poysons, as *Antimony*, or *Stibium*, *Coloquintida*, *Rhubarb*, and the like, taken in a moderate measure, are almost healthfull, and expell those malignant qualities which offend the body, and occasion sickness; but taken in the least excess that can be devised, they then (out of their vitious and naughty qualities) do suddenly and violently destroy all heat, and bring upon the body

The vertues of Salt.

The vices which come from Salt.

body inevitable death, and mortality; ſo is it with this matter of ſalt, and the body of the earth; for as by the moderate diſtributing thereof, it correcteth all barren qualities, diſperſeth cold, and naughty vapours, and yieldeth a kind of fatneſs and fruitfulneſs, whereby the Seed is made more apt to ſprout, and the ground more ſtrong or able to cheriſh the ſame, till it come to perfection, through the ſharp, warm, and diſperſing quality thereof; ſo being beſtowed in too great abundance and exceſs, whereby the earth is ſurfeited, and as it were overcome, and drowned up with too much of this natural goodneſs, and helpful quality, then all his proper vertues turn to egregious vices, as his wholſome ſharpneſs to a fretting, gnawing, and deſtroying greedineſs, his comfortable warmneſs to a conſuming and waſting fierineſs, and his gentleneſs in diſperſing to an infectious and venemous pollution, by the joynt qualities of all which together, the ground is made neither fit to receive any thing from the hand of the Husbandman, nor yet to produce or bring forth any of it ſelf, becauſe every good quality is abuſed or expelled, and nothing but unnaturalneſs, and ſterility left, which like a Serpent lodgeth in the ground, and will ſuffer no good thing to have ſociety with it: And theſe are the effects and miſchiefs which are occaſioned by theſe Sea-breaches, or inundations of the ſalt-water.

The abuſe of ſalt in exceſs.

It is certain, that although in the ſalt marſhes, where the Sea cometh in at certain times, and only waſheth or ſprinkleth the ground all over, and ſo departeth, there is neither want of graſs, nor yet complaint of any evil quality in the graſs; yet it is moſt certain, that no overflow of Salt-water, how little or moderate ſoever, can be truly ſaid to be wholſom for any kind of graſs-ground whatſoever; for graſs is compounded of an infinite world of plants and ſimples, and moſt of them of ſeveral natures and qualities, ſo that if it give nouriſhment to one, yet it may deſtroy ten; neither do I find it by any of the Antients, ſimply and properly applied unto the graſs grounds, but firſt unto the arable, in which having ſpent its primary, or firſt ſtrength upon the ſeed, (which is a great and greedy devourer, or eater up of the ſtrength, and fatneſs of the earth) it then prepares and makes the ground more able and fit to bring

Of ſalt moderately uſed.

No overflow of ſalt water good for graſs.

The grounds of the ſalt Marſhes.

forth graſs, and that of the beſt and fineſt kind: for although the Maſters of the Salt-marſhes find a ſingular and rare profit in thoſe grounds for the feeding, breeding, fatting, and ſuſtaining of their great Flocks of Sheep; which upon theſe Salt grounds, they ſay they will never rot or periſh by that univerſal Diſeaſe; yet they muſt not impute it to the great quantity, goodneſs, or any growth in the graſs, but to the ſalt which they lick up in the graſs, and to the ſalt quality of the graſs, which is not only an Antidote or preſervative againſt that noyſom and peſtilent mortality, but alſo a delightful and pleaſant food wherein thoſe Cattle take more contentment than in any other thing whatſoever; ſo that I muſt neceſſarily reſt upon this Concluſion, that as more moderate waſhing and overflowing of Salt-waters are no certain or particular great helps unto graſs-grounds, eſpecially if they be applied thereunto, and to that purpoſe ſimply at the firſt, without any other preparative or working by a former means, as by tillage, digging, delving, or the like; ſo the exceeding great Inundation, or Sea-breaches which lie long ſoaking and ſinking into the earth, muſt needs be a certain infallible, and almoſt incurable cauſe of barrenneſs, eating, ſpoiling, and conſuming the very roots of all manner of plants, trees, and growths, by which the ground is made utterly incapable of generation or bringing forth: and therefore where theſe great inundations or over-flowings cannot be either prevented or avoided, but as the ſeaſons of the year, they do and muſt hold their courſes; there I would not wiſh any man to beſtow either his labour or his coſt, for it is loſs of time, and loſs of ſubſtance: but where it is to be prevented or avoided by induſtry, or that thoſe over-flowing or Sea-breaches come and happen by caſualty or change, as either by the unnaturalneſs and ſuperabundance of Tides being driven in by the violence and impetuouſneſs of outragious winds, or by any neglect or breach in the Sea-wall, or other miſhaps of the like nature, which hapneth ſometimes ſcarce once in an Age, at the moſt not above once or twice in many years; in theſe caſes there is moſt certain remedy, and the ground ſo ſpoiled and waſted, may by art and induſtry be again reduced and brought to the former perfection and goodneſs; nay, many times amended and

A true cauſe of barrenneſs.

Where this annoyance is incurable.

Where it is curable.

freed from many faults and ſterile qualities, to which it was either naturally addicted, or elſe by chance and accident grew thereunto, by continual wearing and imployment without reſt or refreſhing, by the artificial means of wholſom manures, or other ſtrengthnings which ought to be applied before thoſe faults grow in extremities.

Now touching the cure of theſe grounds which are thus worn out, decayed and made barren by theſe inundations of Salt-water, the owner thereof is firſt to draw into his conſideration, that as the malignity and evil quality of the earth is grown by too much fretting, gnawing, and waſting of the Salt, ſo it muſt be allayed and qualified by a quite contrary condition, which is freſhneſs: the contrary then to Salt-water, muſt of neceſſity be freſh-water, ſo that you are to caſt about your judgment, and by the view, ſituation, and level of the ground (which for the moſt part can have but little difficulty in it, becauſe theſe grounds upon which the Sea thus breaketh, muſt ever be the loweſt of all other, ſo that a true deſcent coming unto it, and a true aſcent coming from it, there is no hardneſs to convey any water-courſe thereunto) look how to bring a freſhneſs which may conquer and overcome this fatneſs, and that muſt therefore be freſh water, which by channels, ditches, furrows, ſluces, and the like you may bring from any freſh river, ſpring, pond, or other freſh-water courſe (though removed ſome diſtance of miles from the place to which your would convey it) to the very place to which you deſire to have it, and with this freſh water you ſhall waſh and gently drown over ſo much of your ſpoiled ground as you ſhall be able reaſonably to deal withal, in other coſts and labour for that year; and if you have plentiful ſtore of freſh water, then having (as I ſaid) drowned it over gently, about four inches, or half a foot deep, you ſhall ſo let it lie two or three days, then drain away that water by the help of back ditches, or by ſluces made for that purpoſe, which if the ſituation of the ground deny you, and that there is no ſuch convenient conveyance, then you ſhall in the loweſt part of the ground (either joyning upon ſome other ſpoiled ground, or upon the Sea-wall or bank) place a Coy, which may either caſt the water into the other ground, or elſe over the wall

The manner of the cure.

One contrary helps another.

The watering with freſh water.

How to draw away the freſh water.

How oft to drown the earth.

and bank into the Sea; and having thus drained away the firſt water, you ſhall then open your ſlucces of freſh water again, and drown your ground over the ſecond time, and do in all things as you did before, and thus according to the plentifulneſs of your freſh water, you ſhall drown your ground, or at leaſt waſh it over with freſh water twice a week, before the beginning of the Spring; and if the Salt-water have lain long, or be but new departed, then you ſhall uſe your freſh water, for ſome part of the Spring alſo.

Helps, if freſh water be wanting.

Now ſome may object unto me here, (and it is a matter altogether unlikely) that in ſome of theſe places, where theſe Inundations and Breaches are, it is impoſſible either to find freſh water, and to bring freſh water unto them, becauſe all the ſprings for many miles about, being made naturally blackiſh, and the rivers by the infection of the ſalt tides, having loſt the greateſt part of their ſweet freſhneſs; the Queſtion now reſteth, whether theſe brackiſh waters are wholſome for this purpoſe, I, or No? To this I muſt needs anſwer, That they cannot in any wiſe be good for thoſe ſpoiled grounds, becauſe the earth naturally of an attractive and drawing condition, ſucking and gathering unto it ſelf any that is of a ſharp ſweet, or ſower taſte, and eſpecially ſaltneſs; ſo that being covered with thoſe brackiſh waters, it will draw from them only their ſalt, (of which it hath too much already) and no part of the freſhneſs which ſhould qualifie and amend it: therefore, if either your ground be thus ſituated, or your neceſſities thus unſupplied, it is better, that you rather forbear this labor of waſhing or drowning your earth, (though it be the firſt, the ſpeedieſt and ſureſt cure of all other) than by watering it with infinite and unwholſome waters, rather encreaſe the miſchief, than any way delay it.

Whether brackiſh water be wholſome.

The firſt time of plowing, & the obſervations therein.

After you have watered your ground, (if it be a work poſſible to be attained unto) or otherwiſe neglected, (it being a thing not poſſible to be found) you ſhall then about the latter end of *March*, plow up all the ground with a good deep ſtitch, turning up a large furrow, and laying it into lands, raiſe them up as much as you can, and make them round, then look

How to mix earth.

of

of what nature or temper the earth is, as whether it be fine ſand, rough gravel, ſtiff clay, or a mixt earth, or any of theſe contraries together: If it be a fine ſand, either white, red, or brown, it matters not whether, then you ſhall take any clean earth which is free from theſe ſalt waſhings, being of a mean or ſmall ſtiffneſs, and likewiſe of as mean and little richneſs, which being digged out of ſome bank, pit, or other place where leaſt loſs is to be had, you ſhall carry it in tumbrels or carriages to the new plowed ground, and there firſt lay it in heaps as you do manure; then after ſpread it over the Land, and being dry, with clotting beetles break it as ſmall as you can poſſibly; for this hungry Clay being of no rich and fat condition, will ſo ſuck and draw the ſalt into it, that it will take away much of the evil quality, and mixing his tough quality with the looſe condition of the ſand, they will both together become apt for fruitfulneſs and generation.

The mixture of Gravel.

If the ſpoiled ground be a rough hard gravelly earth, then you ſhall mix or ſpread upon it the beſt and richeſt freſh Clay you can get, or if there be any ſuch fruitfulneſs near about you, then with a good blew Marle, for that is the cooleſt and the freſheſt, and will the ſooneſt draw out the ſalt from the gravel, and give it a new nouriſhment, whereby any Seed ſhall be fed and comforted which is caſt into it.

The mixture of Clay.

If the ſpoiled earth be of its own nature, a ſtiff and tough Clay, which is but ſeldom found ſo near the Sea-ſhore, then after the plowing you ſhall mix it, and cover it over with the freſheſt and fineſt Sand that you can poſſibly get, for that will not only ſeparate the Salt from the Clay, and take away the natural toughneſs and ſtiffneſs of the ſame, which hindereth and ſuffocateth the tender ſprouts, ſo as they cannot eaſily get out of the earth, but alſo by lending a gentle warmth, will aſſwage the cold quality of the Clay, and make it bring forth more abundantly.

The mixture of mixt earth.

Laſtly, if the ſame ſpoiled earth be of a mixed quality, then you ſhall look whether it be binding or looſening. If it be binding, then you ſhall mix or cover it with fine freſh ſand; if looſening, then with a reaſonable rich and tough clay, for ſo you ſhall bring it to an open and comfortable temper, making

it

it able both to receive, cheriſh, and bring forth the Seed; which before either too much wet, or too much drineſs did ſtifle and bind up within the clots and mould, ſo as it had no ſtrength to bear it ſelf through the ſame.

The ſecond plowing.

When you have covered your Lands with this mixture, you ſhall then plow it over again before Midſummer, turning the new laid earth unto the old earth, and as ſoon as that labour is finiſhed, you ſhall then lade forth your manure or compoſt unto it, in which you are to have a great care what manure you

Election of Manures.

elect for that purpoſe, for it is not the richeſt and fatteſt manure, as your Pigeons-dung, or Pullens-dung, Lime, Chalk, or Aſhes, your Horſe-drng, your ſhovelings upon High-ways, your beaſts hoofs, your Horn ſhavings, your Hemp-weed, or any other Weed which groweth near the Sedge of the Sea, neither your Oxe, or Cow-dung though of all before-named, that is the beſt, which doth the moſt good upon theſe ſpoiled grounds, becauſe they have all in them a ſtrong quality of ſaltneſs or ſharpneſs, which will rather add than diminiſh the evil quality of the earth, but in ſtead of theſe, you ſhall take the mud of dried bottoms of

The beſt Manures.

Lakes, Ponds, and Ditches of freſh-water, and the moiſture or wetter ſuch mud or bottoms are, the better it is, or ſtraw which is rotted by ſome freſh water-courſe, rain, or the like: by no means that which is rotted by the urine or ſtale of horſe or cattle, for that is the ſalteſt of all other; or you may take any Weeds which you ſee grow in freſh Rivers, Ditches, Ponds, or Lakes, eſpecially thoſe which grow at the bottoms of Willow, Sallow, or Oſier-Trees; or you may take the old rags of woollen cloth, or any other manure which you know to be the wool-

The ordering of the Manure

leſt or freſheſt, and with any of theſe, or all thoſe together, you ſhall very plentifully cover your ground all over, and immediately upon the covering or laying on, ſee you preſently plow it, land after land; for to give it any long reſpit after it is ſpread, the Sun out of his attractive and ſtrong natural will exhale and draw out all the vertue from your manure, and ſo ſpoil much of your labour.

The third plowing.

When you have thus manured it, and plowed it, you may then let it reſt till *Michaelmas*, at which time you may plow it the laſt time, and then ſowe it with the ſtrongeſt and hardeſt

Wheat

Wheat you have, of which the white Pollard is the beſt, and there is no queſtion but if it be ſafe from a ſecond Inundation, your crop will be both plentiful and rich, and alſo acquit and pay largely for all your former charges. The ſecond year you need but only plow it as aforeſaid, and then ſowe it with good Hemp-ſeed, and be aſſured you will have a brave crop ariſe thereof; then the third year you ſhall plow it as flat as you can, ſtill throwing it down, and not raiſing it up at all, and then ſowe it with the beſt Oats you can get, according to the nature and ſtrength of your Country, and be ſure to harrow it well, and to break every clot, and make the mould as fine as poſſible, and the next year after your Oats, lay it for graſs, and I dare be bold, it will bear reaſonable meadow; yet would I not have you this year to preſerve it for that purpoſe, but rather to graze it with Sheep or Cattle, eſpecially Sheep, of which I would have you lay on good ſtore; for it matters not how near or cloſe to the ground they eat it; for the next year it will become to the fulneſs of perfection, and be as profitable or more profitable ground than ever it was, and then you may apply or accommodate it for what uſe they pleaſe, either arable, Meadow, or for continual grazing.

The ſecond year ſowing and third.

Laying the earth for graſs.

And thus much touching the manner of reducing again, and bringing unto their firſt perfection, all ſorts of grounds which have been over-flowed, or ſpoiled by Salt-water, or the Sea-breaches, whether it be arable or paſture; as alſo the enriching or bettering of the ſame.

Of grazing.

CHAP. XIII.

Another way to enrich barren Paſtures, or Meadows, without the help of water.

IF your barren Paſtures or Meadows be ſo ſeated, that there is no poſſible means of waſhing or drowning them with water, you are then only to reſtore and ſtrengthen them by the efficacie of Manure or Soyl, without any other help, and this may divers ways be done, as by thoſe manner of manurings, which I have formerly treated of. But to go a better, and briefer way to work, and more for the eaſe and capacity of the plain Husbandman,

bandman, whenſoever you ſhall be poſſeſt of theſe barren paſtures, if the barrenneſs proceed from ſand, or gravel, then ſome Husbands uſe to manure the paſture over with the beſt Clay they can get, firſt laying it on heaps, then ſpreading it, and laſtly, with clotting beetles breaking it into as fine duſt as they can get it, and this labour they commonly perform as ſoon as they can after Harveſt, when the latter ſpring is eaten, and the earth is moſt bare; but if the barrenneſs proceed from an hungry, cold, and dry clay, then the manure is with the beſt mooriſh black earth which they can get, or with any moiſt manure whatſoever, eſpecially, and above the reſt, when the Soil that is digged out of old ditches, ponds, or dried up ſtanding lakes, and this earth muſt be laid plentifully upon the ground in manure heaps, as aforeſaid, that is to ſay; firſt in great heaps, then after broken and diſperſed over the whole ground; and laſtly, broken into ſmall duſt, and mixed with the ſwarth of the ground, and this labour, as the other generally performed after the Harveſt, as a time of moſt convenience, and giving the earth a fit reſpit to ſuck in the ſtrength and comfort of the new earth, and alſo having all the Winter after with his froſts, ſnows, and ſhowers, to mellow, ripen, and mix together one earth with the other: and doubtleſs this is a moſt exceeding good Husbandry, and not to be refell'd or carpt againſt by any knowing or ſound judgment; only it is not the moſt abſolute, or beſt of all ways whatſoever, but that others may be found ſomewhat more near, and ſomewhat more commodious.

Clay manure.

Mooriſh earth.

Therefore, whenſoever you ſhall be owner of any of theſe barren paſtures, or meadows, of what nature or condition ſoever the earth be; whether proceeding from gravel, ſand, clay, or peſtered with any other malignant quality whatſoever, to reduce it to fertility and goodneſs in the ſhorteſt time, and to the moſt profit, about the Month of *March*, when all paſture grounds are at the bareſt, and do as it were remain at a ſtand between decreaſing and increaſing, you ſhall begin then to lead forth your manure for the refreſhing of theſe Earths, and the manure which you ſhall carry unto theſe grounds, ſhall be the ſoil of ſtreets within Cities or Towns, or the parings and gatherings up of the High-ways, much beaten with travel, alſo the earth for

The beſt way to enrich paſture or meadow.

The Soyl of the ſtreets or High-ways.

for two or three foot deep, which lyeth under your dung-hill when the dung is removed, and carryed away, for this is moſt precious and rich mould, and is not alone excellent for this uſe, but alſo for the uſe of Gardens, for the ſtrengthning and comforting of all ſorts of tender plants, and for the uſe of Orchards, for the comforting both of old and young Trees, when at any time their Roots, are bared, or otherwiſe when there groweth any miſlike or decreaſing.

Earth under Dung-hills.

To enrich Gardens or Orchards.

You ſhall alſo take the fine earty or mould which is found in the hollow of old Willow-trees, riſing from the root up almoſt to the middle of the Tree, at leaſt ſo far as the tree is hollow, for than this, there is no earth or mould finer or richer.

The mould of Willow in Trees.

Of all theſe manures, or of any one of them, or of as many as you can conveniently get, you ſhall lead forth ſo much as may very plentifully manure & cover your ground all over; you ſhall firſt lay it on the earth in reaſonable big heaps, that the Sun may not exhale the goodneſs out of it, and then at your beſt leiſure, & ſo ſoon as you can conveniently, you ſhall ſpread it Univerſally over the field, diſperſing it as equally as you can, unleſs your field be more barren in one place than in another, which if it be, then you ſhall lay the greateſt plenty where it is moſt barren, and the leſs where you find the greateſt fertility; yet, by all means, ſee you ſcant not any place, but give every one his due; for to do otherwiſe would ſhew much ill husbandry.

Now it is the uſe of ſome Husbandmen, that what mould or earth is laid out from ſix a clock in the morning, till three of the clock in the afternoon, that they make their Hinds ſpread in the evening before they go to ſupper; and queſtionleſs it is a very good courſe, and worthy to be imitated of every good Husband.

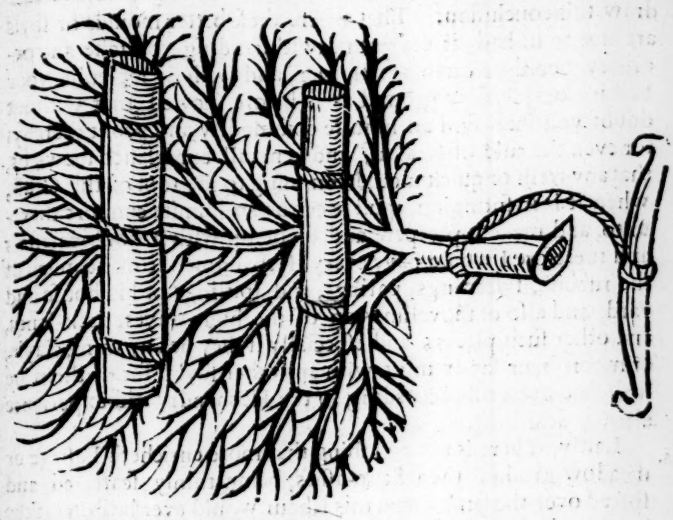
After you have laid forth your mould, and ſpread it all over your paſture or meadow, then you ſhall make ſome boyes, girles, or other people, to pick and gather up all the ſtones, ſticks, or other unneceſſary matter which might happen to be led forth with the mould, and to pick and lay the paſture ſo clean as is poſſible; which done, it is to be intended, that yet notwithſtanding this ground will lye exceeding rough, both in reſpect of the clots of earth, which will not eaſily be broken, as alſo in re-

ſpect of naturall roughneſs of theſe rich moulds, which at this time being digged up in the wet, will not eaſily be ſeparated or diſſolved, and therefore when you have finiſhed the labours beforeſaid, you ſhall let the clots reſt till the Sun and weather have dryed them, then after a ground ſhowr (obſerving to take the firſt that falleth) you ſhall harrow your ground over, after this manner.

A new way of Harrowing.

You ſhall cut down a pretty big white Thorn-tree, which we call the Hauthorn-tree, and make ſure that it be wonderfull thick buſhie and rough grown; which done, you ſhall plaſh it as flat as you can, and ſpread it as broad as you can, and thoſe branches or boughes which of neceſſity you muſt cut in ſunder, you ſhall again plaſh and thruſt into the body of the Tree, binding them with cords or withs ſo faſt thereto, that they may by no means ſcatter or ſhake out, and if any place appear hollow or thin, and cannot come to lie hard, firm, and rough upon the ground, then you ſhall take other rough buſhes and thruſt into the hollow places, and bind them from ſtirring alſo, till you have made your plaſh full and equall in all places, and that all the roughneſs may be as in a flat levell equally touch the ground, when you have thus proportioned your Harrow, you ſhall then take great loggs of wood, or pieces of timber, and with ropes bind them on the upper ſide of this rough Harrow, that the poiſe or weight of them may keep the rough ſide hard, and firm to the earth, and then the Harrow will carry this proportion or figure.

To



To the big end of this harrow, you ſhall fix a ſtrong rope with a Swingle-tree with Treats, Coller, and Harneſs, and one Horſe is fully ſufficient to draw it round about the Paſture or Meadow: ſo with this Harrow you ſhall harrow the ground all over, and it will not onely break all the hard clots to a very fine duſt, but alſo diſperſe them and drive them into the ground, and give ſuch a comfort to the tender roots of the young graſs, that newly ſpringing, that it will double and treble the increaſe. And for mine own part, this experience I my ſelf have ſeen upon an extream barren Paſture ground in *Middleſex*, where none of theſe good moulds or ſoyles could be got; but this Husbandman was fain to take all the rubbiſh and coorſe earth even to the very ſweepings of his yard, and for want of enough thereof, to take any ordinary earth he could get, and with it he dreſt the ground in ſuch ſort as I have now laſt ſhewed you, and this being done in *April*, he had in *June* following as good Meadow as could be wiſht for, and was the firſt Meadow I ſaw cut down in all that Country: from whence I

Of Rubbiſh and ſweepings.

draw this concluſion. That where theſe better moulds or ſoyls are not to be had, if yet not notwithſtanding you take any ordinary mould or earth whatſoever, and with it repleniſh your Paſture or Meadow ground as is before ſhewed, that without doubt you ſhall find an infinite commodity, and profit thereby; For even the rule of Reaſon, and generall experience ſhews us, that any freſh or quick mould comming to the root of the Graſs, when it is in ſpringing, muſt needs be an infinite comfort thereunto, and make it proſper, and ſhoot up with a double haſte; and therefore I would have every Husbandman to make much of the rubbiſh, ſweepings, parings, and ſpitlings of his houſe and yard, and alſo of ſhovellings up of the high-wayes, back-lanes, and other ſuch places; and eſpecially if they be any thing clayie, or mooriſh, or ſandy mixt with any other ſoyl; for of them he ſhall find great uſe, according to the Husbandry and experience already deſcribed.

Of Soap-aſhes. Laſtly, There is not any thing that more enricheth Paſture or meadow ground then Soap-aſhes, being thinly ſcattered and ſpread over the ſame; and this labour would ever be done at the latter end of *April*, for then Graſs is beginning to ſhoot up, and at that time finding a comfort, the encreaſe will multiply exceedingly.

CHAP. XIV.

How to enrich and make the moſt barren ſoyl to bear excellent good Paſture or Meadow.

Two wayes to enrich earth. TO ſpeak then of the bettering and enriching of theſe barren earths, and reducing them to good Paſture or Meadow, it is to be underſtood, that there are but two certain wayes to compaſs and effect the ſame, namely, water or manure.

You are then, when you go about this profitable labour, to conſider the ſituation of the earth you would convert to Paſture, and to elect for this purpoſe, the beſt of this worſt earth you can find, and that which lyes loweſt, or elſe that which is ſo deſcending, as that the bottom thereof may ſtretch to the loweſt part of the continent, for the lower that ſuch grounds lye, the ſooner they are made good, and brought to profit: Next, you ſhall conſider,

ſider what burthen of graſs it bears, and whether the graſs be clean and intire of it ſelf (which is the beſt and likelieſt ſoyl to be made fruitfull) or elſe mixt with other worſer growths, as Thiſtle, Heath, Broom, or ſuch like, and if it be burthened with any of theſe naughty weeds, you ſhall firſt deſtroy them by ſtubbing them up by the roots, and by burning the upper ſwarth of the earth with dry ſtraw mixt with the Weeds which you ſhall cut from the ſame, then it ſhall be good for certain nights, both before the firſt and latter ſpring, to fold your ſheep upon this ground, and that not in a ſcant manner, but very plentiful, ſo as the dung of them may cover over all the earth, and their feet trampling upon the ground, may not only beat in the dung, but alſo beat off all the ſwarth from the earth, that where the Fold goeth, there little or no graſs may be perceived; then whileſt the ground is ſoft, and thus trampled, you ſhall ſow it all over with Hay-ſeeds, and then with your flat board beetles, beat the ground ſmooth and plain, which done, you ſhall then ſtrow, or thinly cover the ground with the rotten ſtadds of Hay-ſtacks, and the moyſt bottoms of Hay-barns, and, over that, you ſhall ſpread other ſtrong manure, of which, Houſe-dung, or Horſe-dung, and mans ordure mixt together is the beſt, or for want of ſuch, either the manure of Oxen, Kine, or other beaſts; and this manure alſo you ſhall ſpread very thin upon the ground, and ſo let it lye till the Graſs come up through the ſame, which Graſs you ſhall by no means graze or feed with your Cattell, but being come to the perfectneſs of growth, you ſhall mow it down; and although it will be the firſt year but ſhort and very coorſe, yet it skilleth not; for the enſuing years ſhall it yield profit, and bring forth both ſo good graſs, and ſuch plenty thereof as reaſonably you can require; for this is but the firſt making of your ground, and alteration of the nature thereof: neither ſhall you thus dreſs your ground every year, but once in twenty or 40 years, having plenty of water to relieve it. When therefore you have thus at firſt onely prepared your ground by deſtroying the barren growth thereof, and by manuring, ſowing, and dreſſing it, you ſhall then carefully ſearch about the higheſt parts of the ground, and the higheſt parts of all other grounds, any way neighbouring round

about

Of watering Grounds.

about it, and ſomewhat above the level thereof, to ſee if you can find any Springs in the ſame (as doubtleſs you cannot chuſe but do, except the ground be of more then ſtrange nature;) and the heads of all ſuch ſprings as you ſhall find, you ſhall by gutters and channels draw into thoſe ditches which ſhall compaſs your meadow round about, obſerving either to bring the water into that part of the meadow ditch which ever lyeth higheſt, and ſo let it have a currant paſſage through the ditches down to the lower part thereof, and ſo into ſome Lake, Brook, or other channell, and in this ſort you may bring your water a mile or two: Nay, I have ſeen water brought for this purpoſe, three or four miles, and the gain thereof hath quit the charge in very plentifull manner.

Helps in the Watering.

But if you cannot find any Spring at all, nor can have the help of any Lake, Brook, River, or other channell of moving water, (which is a doubt too curious, as being caſt beyond the Moon) you ſhall then not onely caſt ditches abaut this your Meadow ground, but alſo about all other grounds, which ſhall lye about, and that in ſuch ſort, that they all may have no paſſage but into the upper part of the meadow ditch, ſo that what rain ſoever ſhall fall from the Skie upon thoſe earths, it ſhall be received into thoſe ditches, and by them conveyed into the meadow ditch: and to augment the ſtore of this water, you ſhall alſo in ſundry parts of thoſe upper grounds which are above the meadow in places moſt convenient, dig large Ponds or Pits, which both of themſelves may breed, and alſo receive all ſuch water as ſhall fall neer about them, and thoſe Ponds or Pits being filled (as in the winter time neceſſarily they muſt needs be at every glut of rain) you ſhall preſently by ſmall drains, made for that purpoſe, let the water out from them into the ditches, and ſo into the meadow ditch, and ſo ſtopping all the drains again, make the Ponds or Pits capable to receive more water.

When and how to water.

When you have thus made your ground rich with water, and that you ſee it flow (as in the winter time neceſſarily it muſt) in plentifull manner through all your ditches, you ſhall then twice or thrice in the year, or oftner, as you ſhall then think meet in the moſt convenienteſt places of the meadow ditch,

ſtop

ſtop the ſame, and make the water to riſe above his bounds, and to over-flow and cover your meadow ground all over, and if it be a flat level ground, if you let the water thus covering it to lye upon the ſame the ſpace of four or five dayes, or a week, it ſhall not be amiſs; and then you may water it the ſeldomer. But if it lye againſt the ſide of a hill, ſo that the water cannot reſt upon the ſame, then you ſhall waſh it all over, leaving no part unmoyſtened; and this you ſhall do the oftner, according as the water ſhall fall out, and your water grow more or leſs plentifull.

The beſt ſeaſon for watering.

Now for the beſt ſeaſon or time of the year for this watering of meadows, you ſhall underſtand, that from Alhallowtide, which is the beginning of *November* (and at which time all after-growth of meadows are fully eaten, and cattel for the moſt part are taken up into the houſe (untill the end of *April*) (at the which time graſs beginneth to ſpring and ariſe from the ground) you may water all your meadows at your pleaſure without danger, if you have water enough at your pleaſure, and may ſpend or ſpare at your will; yet to do in the beſt perfection, and whereby your ground may receive the greateſt benefit; you ſhall underſtand, that the onely time for the watering of your meadows, is, immediately after any great Flux of rain, falling in the Winter, any time before *May*, when the water is moſt muddy, foul, and troubled, for then it carrieth with it a ſoyl or compoſt, which being left upon the ground, wonderfully enricheth it, and makes it fruitfull beyond expectation, as daily is ſeen in thoſe hard Countries, where almoſt no graſs grows but by this induſtry: And here you muſt obſerve, that as you thus water one ground, ſo you may water many, having ever reſpect to begin with the higheſt, and ſo let the water paſs out of one ground into another, untill it come to the loweſt, which commonly is ever the moſt flat and level, and there you may let the water remain ſo long as you think good (as was before ſhewed) and then let it out into other waſt ditches or rivers. And here you ſhall know, that this loweſt ground will ever be the moſt fruitfull, as well becauſe it lyeth the warmeſt, moyſteſt, and ſafeſt from ſtorms and tempeſts, and alſo becauſe what ſoyl or other goodneſs this over-flow of water, or the rain waſheth from other grounds, it

leaveth

leaveth upon this, and ſo daily encreaſeth the fertility, from whence you ſhall gather, that at the firſt making of theſe meadow-grounds, you may beſtow leſs coſt of manure and other charges upon this loweſt, flat, level ground, than on the higher: and ſo by that rule alſo, obſerve to beſtow on the higheſt ground, and the higheſt part of the higheſt ground ever the greateſt abundance of manure, and ſo as you ſhall deſcend lower and lower, to lay your manure thinner and thinner, yet not any part utterly unfurniſhed and void of compoſt; yet, as before I ſaid, you are to remember, that theſe meadow grounds need not thus much uſe of manure (having this benefit of water, and the firſt years dreſſing as was ſhewed in the beginning of this Chapter) above once in twenty years; nay, it may be, not above once in a mans life time.

And here alſo is to be conſidered, that the water which commeth from Clay or Marl grounds, being thick, muddy, and puddy, is much better and richer than that which commeth from ſand, gravel, or pibble, and ſo runneth clear and ſmooth, for that rather doth waſh away and conſume the goodneſs of the ground, than any way add ſtrength thereunto.

CHAP. XV.

Of the inriching and dreſſing of Barren grounds, for the uſe of Hemp or Flax.

Grounds ill for Hemp or Flax.

YOU ſhall underſtand, that there are two ſorts of grounds, which out of their own natures utterly refuſe to bear Hemp or Flax; that is, the rich ſtiff black Clay, of tough ſolid and faſt mould, whoſe extreame fertility and fatneſs giveth ſuch a ſurcharge to the increaſe of the ſeed, that either with the rankneſs it runneth all into Bun and no rind; or elſe the ſeed being tender, and the mould ſad and heavy, it burieth it ſo deep therein, that it can by no means get out of the ſame: The other is the moſt vile and extreme barren ground, which by reaſon of the climate wherein it lyes, is ſo exceeding ſterile and unfruitfull, that it will neither bear theſe ſeeds, nor any other good ſeed. And of theſe two ſoyls only I purpoſe in this place to treat; for which, ſuch ſoyls as will naturally & commodiouſly bear theſe ſeeds, I have nothing to do, in that I have ſufficiently

ficiently written of them in mine *English Husbandman*, and *English Housewife*, which are books onely for good grounds, but this for all ſuch grounds as are utterly held without cure.

To begin then with the ſtiff black Clay, which albeit it be very rich for Corn, is moſt poor for theſe ſeeds, when you would reduce and bring it to bear Hemp or Flax, which neer unto the Sea-coaſt is of greater price and commodity than Corn any way can be, eſpecially adjoyning unto any place of fiſhing, in reſpect of Nets and other Engines which is to be made of the ſame, and which being daily waſted and conſumed, muſt likewiſe be daily repleniſhed; you muſt firſt with a ſtrong plough, fit for the nature of ſuch land, plow up ſo much ground as you intend to ſow Hemp or Flax upon, about the midſt of *May*, if the weather be ſeaſonable, and the ground not too hard: if otherwiſe, you muſt ſtay till a ſhowr do fall, and that the earth be moiſtned, then ſhall you hack it and break the clots in ſmall pieces; then with the ſalt Sea-ſand, you ſhall ſand it very plentifully; but if that be not to be gotten, and that you be very well aſſured of the natural richneſs of the earth, you ſhall then ſand it with the beſt Red ſand you can get or find neer unto you, and upon every Acre of ground you thus ſand with freſh ſand, you ſhall ſow three buſhels of Bay-ſalt, and then plow up again the earth, ſand and ſalt together, which would be done about the latter end of the year, as after *Michaelmas*, and ſo let the ground reſt till ſeed-time, at which time you ſhall firſt before you plough it, go down to the low rocks on which the Sea beats, and from thence with drags and other Engines, gather thoſe broad leaved black weeds, which are called Orewood, and grow in great tufts, and abundance about the ſhore; and theſe weeds you ſhall bring to your Hemp-land, and cover it all over with the ſame, and then you ſhall plow it again, burying the weeds within the earth. Black Clay for Hemp, &c.

And herein is to be obſerved, that in any wiſe you muſt lay theſe weeds as wet upon the Land as when you bring them out of the Sea, provided ſtill, that you add no other wet unto them but the ſalt-water, for ſo they are of all ſoyls and manures whatſoever the onely beſt and fruitfulleſt, and moſt eſpecial for theſe ſeeds, and breed an increaſe beyond expectation.

When you have thus plowed over the ground, you ſhall then hack it again, and then ſow it with either Hemp or Flax-ſeed, which you pleaſe, and after it is ſown, you ſhall then harrow it (and not before) and you ſhall be carefull to harrow it into as fine mould as you can, and this mould is likely to run fine enough, as well by reaſon of the fertility, as alſo of the mixture; yet what clots you cannot break with your Harrows, thoſe you ſhall break with your clotting-beetle, and ſuch like tools; then after the firſt great ſhowr which ſhall fall after your ſowing, you ſhall run over your land thus ſown with your back Harrows, that is, with a pair of large Harrows, the wrong ſide turned upward, to wit, the teeth turned from the earth, and the back towards the earth; and if need be, you ſhall lay upon the Harrows ſome indifferent heavy piece of wood, which may keep the back of the Harrows cloſer to the ground, and ſo go over all the earth, and lay it as ſmooth and light as is poſſible, without leaving the ſmalleſt clot that may be unbroken. Now if the ground be ſown with Hemp, you ſhall not think of weeding it at all, becauſe Hemp is ſo ſwift a grower, and ſuch a poyſon unto all weeds, that it over-runneth, choaketh, and deſtroyeth them; but if it be ſown with Flax or Line, which is a much tenderer ſeed, and bringeth forth more tender leaves and branches, then you ſhall watch what weeds you ſee ſpring up, and in their firſt growth pluck them up and caſt them away, till you behold your Flax or Line to be grown above the weeds, and then you may let it alone alſo, for after it hath once gotten height, it will not be over-grown with weeds.

Making of ill earth bear, &c.

Now touching the other ſoyl, which through the extreame barrenneſs thereof, refuſing to bring forth any good fruit at all, you ſhall in all points dreſs it, as you dreſs your plain clayes, deſcribed in the ſecond Chapter of this Book, beginning at the ſame time of the year that is then appointed, or (if more neceſſary occaſions hold you) if you begin later, it ſhall not be amiſs, and then at *Michaelmas* you ſhall plow it over the ſecond time, and manure it with ſea-weeds, and ſo let it lye at reſt till *March* (which is ſeed time) and then plow it again, and manure it with ſea-weeds again, and after the plowing, you ſhall hack

hack it, and if in the hacking you find the earth ſtiff and tough then you ſhall harrow it before you ſow it, and harrow it again, breaking the earth ſo ſmall, and laying it ſo ſmooth as poſſible you can, uſing the help both of the clotting beetles, and all other tools which may be available for breaking the earth and making the mould as fine as any aſhes; then after the firſt great ſhowr of rain, perceiving the ground to be well moiſtned, you ſhall inſtead of the back Harrows (which upon this earth may be too light) take the great rowler which is deſcribed in the book of the *Engliſh Husbandman*, being a great round piece of timber of many ſquares, drawn either by Horſe or Oxen, but a ſingle Horſe is beſt, both in reſpect of much treading the ground, as alſo for the ſwift going away or drawing of the ſame: for the ſwifter it is drawn, the better it breaketh the ground, and the lighter it leaveth the mould: and with this rouler, you ſhall run over and ſmooth your ground very well, leaving no clot unbroken, and ſo let it reſt.

As for the weeding of this ground, you ſhall not reſpect it at all, for naturally it will put up no weed, the very ground of it ſelf being a very great enemy thereunto, nor ſhall you need to dreſs this ground in the form before ſaid, but once in eight or ten years: only every ſeed time, when you plow it (as you ſhall not need to plow it at any time, but ſeed time only) you ſhall before the plowing, cover or manure the Land with the ſea-weed before ſpoken of, which will give ſtrength enough to the ground, without any other aſſiſtance. Weeding.

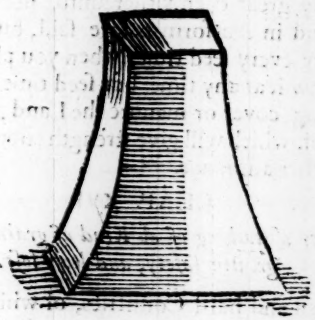
CHAP. XVI.

The manner of ſtacking of all Kind of grain or pulſe with greateſt ſafety, and leaſt loſs.

IN theſe barren and hard Countries, of which I have formerly written, all ſorts of buildings are exceeding coſtly and ſcarce, both in reſpect of the clime, which is commonly moſt extreme cold, mountainous, and much ſubject to ſtorm and tempeſt, as alſo through the great want of Wood and Timber, which in thoſe hard ſoyls doth hardly or never proſper, and therefore in ſuch places buildings muſt be both ſmall and dear, ſo that it will be very hard for the Husbandman to have houſe-room for

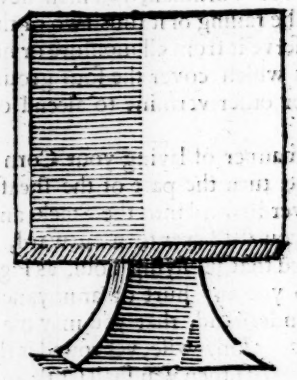
all his corn; but that of neceſſity he muſt be inforced to ſtack much, or the moſt part of his Corn without doors, which albeit it be a thing very uſuall in this Kingdome, yet is it in many places ſo inſufficiently done, that the loſs which redounds thereby (partly by the moyſture of the ground, which commonly doth rot and ſpoyl at leaſt a yard thickneſs of the bottom of the Stack next the ground, and partly through Mice, Rats, and other Vermine, which breeding in the Stack, do eat and devour a great part thereof, as alſo through many ſuch like negligent cauſes) is greater than a Husband may with his credit be guilty of, or a profitable Husband will by any means ſuffer to be loſt ſo negligent.

To ſhew then the manner how to ſtack or mow your Corn without doores, in ſuch ſort, as neither the ground ſhall rot it, nor theſe vermines deſtroy it, nor any other loſs come to it by way of ill Husbandry, you ſhall firſt cauſe four pieces of timber, or four ſtones, to be hewed broad and round at the neither end, like the faſhion of a Sugar-loaf, or this figure.

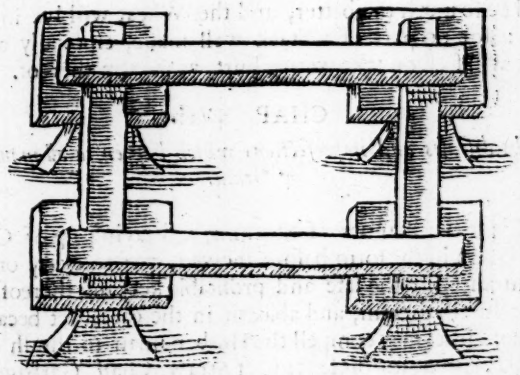


And theſe pieces of wood or ſtone ſhall be in length three-foot or thereabout, and in compaſs or breadth at the bottom, two foot, or a foot and a half, and at the top not above one foot: theſe four pieces of wood or ſtone you ſhall place in your ſtack-yard, or other convenient place neer your thraſhing-floor,

floor, and you ſhall place them four ſquare, of an equal diſtance one from another: then you ſhall cut out four ſmooth boards of two inches and a half thick at the leaſt, and full three foot ſquare every way, and theſe boards you ſhall lay upon the heads or narrow tops of theſe ſtones or pieces or timber according to this Figure.



Then ſhall you take ſtrong over layes of wood, and lay them four ſquare from one board to another, according to this Figure.



And

And then upon theſe over-layers you ſhall lay other ſmaller poles cloſe one by another, and then upon them you ſhall mow or ſtack your Corn, whether it be Wheat, Barley, Oats, Peaſe, or any other kind of grain, and be ſure if you make your ſtack handſome and upright, which conſiſteth in the Art and Workmanſhip of the Workman, you ſhall never receive loſs in your Corn: for the raiſing of it thus two or three foot from the ground, will preſerve it from all moiſture or hurt thereof, and the broad boards which cover the four ground-poſts will not ſuffer any Mice or other vermine to aſcend or come into the ſame.

Now for the manner of laying your Corn into the Stack, you ſhall be ſure to turn the part of the ſheaf where the eares of the Corn lye ever inward into the Stack, and the other which is the ſtraw end, you ſhall ever turn outward, and by that means you ſhall be aſſured that no flying Foul, as Pigeons, Crows, and ſuch like, can do you any hurt or annoyance upon the ſame: Laſtly, you ſhall underſtand, that you may make theſe Stacks either round, ſquare, or long-wiſe, yet round is the ſafeſt, and if you do make them longwiſe, then you ſhall ſet them upon ſix ground-poſts, or eight, according to the length and proportion you would have it, and after your Stack is made, you ſhall then thatch it very well to keep out the wet; alſo if when you do Stack your Wheat, you do top your Stack with Oats or other courſe grain, it will be ſo much the better, and the Wheat will lye in greater ſafety: for no part of a Stack well made, eſpecially a round Stack, will ſo ſoon take wet or hurt, as the top thereof.

CHAP. XVII.

The diſeaſes and imperfections which happen to all manner of Grain.

ALbeit the manner of Stacking and laying up of Corn or Grain in the form before ſhewed, may to every one give an aſſurance for the ſafe and profitable keeping thereof as long as it indureth therein, and abideth in the eare, yet becauſe divers neceſſities may compell the Husbandman to thraſh out his Corn, as either, for preſent uſe of Straw, Chaff, Garbage, or o-

ther

other commodities needfull unto him (as the ſeaſon of the year ſhall fall out) I think it moſt neceſſary in this place, to ſhew how all manner of Grain and Pulſe, of what nature ſoever, may moſt ſafely and profitably be kept from all manner of annoyances, or corruptions whatſoever, being a work of that utility and goodneſs, that not any belonging to the Husbandman doth exceed it: Nor ſhall it be ſufficient to ſhew the offences and diſeaſes of Grain with their cures and healthful preſervations, whilſt it is in the Husbandmans poſſeſſion, but alſo whilſt it is in the earth, and at the mercy of cold, heat, moyſtneſs, or dryneſs, and not onely ſubject to the malignant influences of Stars and Planets, with the encreaſing and decreaſing of the Moon and her operations: but alſo of divers other hurtfull Vermine; as birds, worms, piſmires, dorrs, ſnails, moals, and other ſuch like: ſome whereof conſume and devour the grain ere it ſprout, other ſprouting when the kernel is rotten, and turned to ſweet ſubſtance, and others after it is ſprouted, by devouring the firſt tender leaves, before they have any ſtrength to appear above earth, being as it were but ſoft white threads not changed into the ſtrength of green, becauſe the air and Sun hath not yet lookt upon it.

Crows, Pidgeons, and Birds.

To begin then with the firſt enemies of corn or grain, after it is thrown into the earth, there is none more noyſome then *Crows*, and *Choughes*, and other ſmaller birds, which flocking after the ſeeds-man will in a manner devour and gather up the grain as faſt as it is ſown: for as according to the old ſaying, That *many hands make light work*, ſo many of their mouths (being creatures that ever flye in flocks together) and their much nimbleneſs in devouring, ſoon rob the earth of her ſtore, and deprive the labouring Husbandman of very much profit; and the Grain which the creatures do moſt conſume, is all manner of white Corn, as Wheat of all kinds, Rye and Oats, as alſo Hemp-ſeed, Lin-ſeed, Rape-ſeed, and ſuch like: Neither are they only offenſive during this time of ſowing, but after it is ſown and covered, digging it with their ſtrong bills out of the earth, and ſo making the waſte greater and greater.

The Cure.

The prevention or cure of this evill, is divers, as the affections of people, and cuſtom of Countries do inſtruct them: for ſome

ſome (eſpecially the *French-men*) uſe when they ſow theſe grains and ſeeds, firſt to ſprinkle it with the dregs or lees of their bittereſt oyles, which when theſe devouring fowls do taſte, they refuſe to do any further hurt: Others uſe to ſow Pigeons dung or Lime with their ſeed, which ſticking unto the grain, the unſavorineſs thereof will make the fowl caſt up the grain again, and leave to do further hurt. But foraſmuch as theſe medicines cannot ever be had, nor are ever wholeſome for every ground, the onely beſt and ſafeſt means to prevent this evil, is, to have ever ſome young boy, with bow and arrows to follow the ſeed-man and Harrows, making a great noiſe and acclamation, and ſhooting his Arrows where he ſhall ſee theſe devourers light, not ceaſing, but chaſing them from the Land, and not ſuffering them at any time to light upon the ſame, and theſe ſervants are called Field-keepers, or Crow-keepers, being of no leſs uſe and profit (for the time) then any other ſervants whatſoever. Nor is it ſufficient to have the Field-keepers for the bare time of ſeed only, whileſt the grain is in ſowing, but he ſhall alſo maintain them untill ſuch time as you ſee the grain appear above the earth, which for Wheat or Rye, becauſe they are winter ſeeds, and ſo longer in ſprouting, will ask a full month; for all other ſeeds which are ſown in the Spring, or Summer, a fortnight is full ſufficient: And this Field keeper ſhall not fail to be in the field an hour before Sun in the morning, and ſo continue till half an hour after Sun-ſet in the evening, for at the riſing and ſetting of the Sun is ever done the greateſt miſchief, for then are all creatures moſt eager and hungry; and though the indurance may promiſe much pain and trouble, yet queſtionleſs the labour to any free ſpirit, is both eaſie, and pleaſant.

Additions. Alſo if your Field-keeper, inſtead of his bow and arrows, do uſe to ſhoot off a musket, or Harquebuſh, the report thereof will appear more terrible to theſe enemies of Corn, and the profit thereof will be a great deal more: for a ſhot or two of powder will ſave more Corn, than a weeks whooping and ſhouting, onely you muſt obſerve, that your Field-keeper uſe no bullet or hail-ſhot, for ſo he may turn fearing to killing. Now touching the deſtruction which theſe creatures make of Corn after it

is

is ſtackt up by tearing off the thatch, and digging holes and pits therein; to prevent that, you ſhall cauſe the thatcher to ſcatter upon the thatch, great ſtore of aſhes of any kind, or elſe Lime, that as the Pidgeons or Crows tear up the ſtraw, the Lime or aſhes will ſparkle into their eyes and nares, which they will not indure; as for thoſe parts of the ſtack which cannot be thatcht, as the ſides and ends; upon them you ſhall prick divers ſcare-crows, as dead Crows, or dead Pidgeons, or any other rags, as the ſhape of a man, made either of thumb-ropes of hay or ſtraw, or elſe ſome old caſt-away apparel, ſtopt with ſtraw, & ſo fixed on the ſtack, alſo in this caſe you may uſe Clap-mills, or ſuch-like toys, which make a great noiſe. But to conclude, the beſt prevention for theſe Creatures (if you want ability to maintain a field-keeper) is to take long lines of pack-thread, and in them to knit divers feathers of divers colours, eſpecially white ones, and with little ſtakes ſo faſten them over the Corn, that with every breath of wind the feathers may dance and turn about, and the nearer that theſe blinks or ſcares come to the ground (when the Corn is new ſown) ſo much the better it is, leaſt the fowl finding a way to creep under them, begin not to reſpect them; ſo that a hand or two from the ground is ſufficient; Provided that the feathers and ſcares have liberty to play and move.

But if it be to ſave Corn in ripening, that is to ſay, a little before it be reapt, when the ears begin to harden, or when it lieth in ſingle ſheaf upon the Land, for then fowl and birds do as great miſchief, as at any other ſeaſon, it ſhall then be fit that you raiſe theſe lines or ſcares upon higher ſtakes, ſo as they may play as much above the ears of Corn, as before they did above the earth; and amongſt theſe ſcares thus made upon lines in ſundry parts of the field, you ſhall upon other ſtakes place many other bigger ſcares, as dead Crows, Pies, Gleads, Pigeons, or ſuch like, as alſo the proportion of a man formerly ſhewed you, or any rags of cloath being black, fowl, and ugly, like Bakers malkins; and than this, there is no ſafer way for the defence of Grain or Corn from theſe Birds, and ſuch like.

The next great devourers or conſumers of grain are Piſmires or Ants, which although it be but a little Creature, yet it is ſo labourſome, that the grain which they carry away or deſtroy by eating amounteth to a great quantity, and the miſchief which Of Piſmires.

theſe little vermine do, after the Corn is covered in the ground, and before it ſprout, for they creeping in at the little chinks of the earth, and finding the Corn, either drag it out, or eat it, ſo that it cannot grow, and the grain which they moſt hurt, is all manner of white Corn, eſpecially your fineſt and ſmalleſt Wheat, for the skin or hull is thinneſt, and the kernel whiteſt and ſweeteſt: alſo to barley they do much hurt, eſpecially that which is fulleſt and beſt; likewiſe to Rye, Hemp-ſeed, Lin-ſeed, and Rape-ſeed; as for Oats, becauſe it is double hull'd, and alſo your great whole ſtraw wheat, and polard wheat, which is thick hull'd, their hurt is not ſo much to them, and unto pulſe nothing at all, becauſe they are too heavy, too thick skinned, and bitter in taſte.

The Cure. The beſt cure and prevention for theſe Piſmires, is, to ſearch your Corn-fields well, eſpecially under hedges and old trees, and on the top of Mole-hils, and if you find any beds or hills of Ants or Piſmires, preſently after Sun-ſetting, with hot ſcalding water to drown the beds or hills, or with wet ſtraw and fire, to make ſuch a ſmoak upon them, as may ſmother them to death: alſo if you manure your Corn-lands with aſhes, lime, or ſalt-ſand, you ſhall be well aſſured it will never breed Piſmires.

Of Dores. Next unto theſe, your Dores or great black Clocks are vehement deſtroyers of all kind of Corn, both white Corn and Pulſe, whilſt it lieth dry on the earth, and before it ſprout; for for after it begimneth to ſprout, they do no more touch it, and theſe Dores deſtroy it in the ſame manner, as the Piſmires do, by creeping in at the ſmall crevices of the earth, and finding the grain, do as long as it is dry, feed thereon; and though they are no hoarders, or gatherers together of the grain, keeping it in heaps in dry places, as the Piſmires and other vermine do, yet they are great feeders thereon, and that continually: beſides, they will ever chuſe out the fulleſt and beſt Corn, and leave the leaner, whereby they do the Husbandman double injury, as firſt to devour, and then to devour but the beſt only.

The Cure. The cure or prevention for theſe Dores, or black Clocks, is in Seed-time to make great ſmoaks in your Corn-fields, which will preſently chaſe them from thence, for they are the greateſt enemies that may be to all manner of ſmoak; but if that be not ſufficient,

ſufficient, then immediately before you ſowe your Corn, you ſhall very lightly ſowe your Land with ſharp Lime, and whenſoever the Dore ſhall find the ſmell, or taſte thereof, preſently he will depart; or if he eateth of the grain that toucheth the Lime, it is a preſent Poyſon unto him, and there he dieth.

Of field Rats and Mice.

After theſe, your field Rats and Mice are very vehement deſtroyers of all manner of grain or Seeds before they ſprout, eſpecially all ſorts of wheat, and all ſorts of pulſe, becauſe for the moſt part thoſe kind of grains in many Soyls are ſown under furrows, and not harrowed; ſo that the furrows at firſt lying a little hollow, theſe Vermines getting in between the earth and them, will not only devour and eat a great part of the grain, but alſo gather together great heaps thereof into their neſt, as is often ſeen when at any time their neſts are found, ſome having more, ſome leſs, according to their labours.

And albeit in other Soils where the grain is ſown above furrow, and ſo harrowed in, and laid much more cloſe and ſafe, they cannot do ſo much hurt as in the former, yet even with theſe they will with their feet dig out the Corn in great abundance, and though in leſs meaſure, yet do hurt that is unſufferable; ſo that to conclude, neither Rye, Barley, Oats, nor any other ſmaller and more tender Seeds, are free from their annoyance and deſtruction.

The Cure.

Now the Cure and prevention for theſe Field Rats, or Mice, are divers, according to the opinions of divers Authors, and divers of our beſt experienced Husbandmen: for ſome uſe in the Dog-days, or Canicular days, when the Fields are commonly bare, to ſearch out the holes and neſts of theſe Rats and Mice, which are eaſily known, being little round holes in the earth, made ſo round and artificially as if they were made with an Auger, no bigger than the body of the Creature that was to lie in it, and into theſe holes they uſe to put a few *Hemlock ſeeds*, of which when the beaſts taſtes it is preſent death unto them: Others uſe to ſprinkle upon the land *Hellebor*, or neeſing powder mixt with Barley-meal, of which the Mice and Rats will greedily feed, and it is a deadly bane and preſent death unto them.

Laſtly, (& which is the beſt Medicine) if you take a good quantity of ordinary green glaſs, beaten alſo to powder, and as much

Copperas or Vitriol beaten alſo to powder, and mix them with courſe honey, till it come to a paſte, and then lay it in the holes, and moſt ſuſpitious places, and it will neither leave Rat nor Mouſe about all your fields, but ſuddenly deſtroy them.

Of Worms. The next great deſtroyers of Corn and Grain, are Worms, and they deſtroy it in the ſprouting, then when the ground hath rotted it, and the white or milk ſubſtance breaking open the upper huſk, ſhooteth forth in little white threds at both ends, upon which whilſt it is ſo moiſt and tender, the worm feedeth extreme, and ſo devouring up the ſubſtance or ſperm, is the cauſe the corn cannot grow on get out of the ground, and theſe *worms* being as it were the main citizens within the earth, are ſo innumerable, that the loſs which is bred by them is infinite.

The Cure. Now the cure or prevention for theſe Worms, is diverſly taken; for ſome Husbandmen uſe but only to ſtrike into the Plow-Reſt, and under the loweſt edge of the ſhebord certain crooked ſpikes of Iron of great nails half driven in, and turned back again, with which as the Plow runs tearing in the ground, and turns up the furrow, thoſe pieces of Iron kill and tear in pieces ſuch Worms as are either within or under the furrow that the Plow caſts up, and this is ſure a very good Husbandry Practice, but not ſufficient for the deſtroying of ſuch a ſecret hurtful vermine which is ſo innumerable, and lieth ſo much concealed; therefore more curious Husbands uſe beſides this help of the Plow, to take Oxe-dung and mix it with ſtraw, and then to burn it up in the land making a great ſmoke over all the land, immediately before you plow it for Seed, and it is thought that this will kill all the worms which lie ſo high in the earth, as to hurt the Corn.

Others uſe before they make either the mixture or the ſmoke, to wet the ſtraw in ſtrong lye, and then adding it to the dung, the ſmoke will be ſo much the ſtronger, and the Worms kill'd the ſooner; or if you ſprinkle ſtrong Lye upon your Seed, before you ſowe it, there is not any Worm that will touch the grain after. Alſo if you take hemp and boil it in water, and with the water ſprinkle your ſeed before you ſowe it, not any Worm will come near to touch it.

Of Rye not to be wet. Yet it is to be obſerved in this rule of wetting your ſeed-corn, that

that by no means you muſt wet your Seed-Rye, for it is a Grain ſo warm and tender, that it will neither indure cold, wet, nor ſtiff ground, inſomuch that the Plow-man hath a Proverb, that Rye well drown'd in the Hopper; that is to ſay, it muſt neither be ſown on wet ground, nor in a wet day, ſince preſent ſhowers are apt to deſtroy.

Laſtly, it is thought that oft plowing your ground in the wane of the Moon is a very good means to deſtroy both.

Touching that practice which many uſe, to gather the worms from their lands at Sun-riſe, in bright dewy morning, and Sun-ſet, when the worms couple above the earth, I hold it more fit for ſmall Gardens, than large Corn-fields.

The next great deſtroyers of Corn, are Snails, and they deſtroy it after it is ſprouted, feeding upon the tender white threds and ſions which ſtart from the Seed and would riſe above the earth, being the ſtem or ſtalk on which the ears ſhould grow (were it not devoured and eaten up by the Snails, and ſuch like Vermine) as ſoon as it begins to peep up, or as it were to open the earth; whereby it is driven back and forced to die in the earth: for theſe creatures ſucking up the tender ſweetneſs, deprive it both of life and nouriſhment. Of Snayls

The Cure and prevention for this evil, is to take the ſoot of a Chimney, and after your Corn hath been ſown a week or ten days, or within two or three days after the firſt ſhower of Rain which ſhall fall after the Corn is ſown; you ſhall ſowe this ſoot of the Chimney thinly over the Land, and not a Snail will indure to come thereon: Others uſe (eſpecially in *France* and thoſe more fertile Countries) to take common Oyl-lees, and after the Corn hath been ſown, and is ready to appear above the ground, to ſprinkle it all over the Lands, by which means no Snail or ſuch like Creature will indure to come near the ſame. The Cure.

The next great deſtroyer of Corn is accounted the Graſhopper, and he alſo deſtroyeth it after it is ſprouted, and appeareth above ground as the Snail doth, but ſomewhat more greedily, for he not only feedeth on the tender white ſtrings, but upon the firſt green leaves that appear alſo; by which means the Corn is not able to ſpring or bring forth a ſtem or ſtalk to bear Of Graſhoppers.

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the ear upon, or if it do put forth any, yet it is so small, weak and wretched, that the ear growing on the same, is withered and lean, and the grain dry and blasted, and no better than chaff; nor is there any Corn that scapeth the destruction of the Grashopper, he generally feedeth on all: first on Wheat and Rye, because they are the earliest, then on Barly and Oats, and lastly on pulse, upon whose leaf and blossom he feedeth, whilst the first is sweet and pleasant, or the other green.

The Cure. Now the Cure or prevention for these Creatures, is, according to the opinion of some Husbandmen, to take Worm-wood, and boyl it well in water, till the strength of the Worm-wood be gone thereinto, and then wet with that water in the month of *May*, to sprinkle all your Corn over when the Sun is rising or setting, and not any Grashopper will come near, or annoy the same. Others use instead of Worm-wood to boil Centaury, and to use the water thereof in the same manner as aforesaid, and find an equal profit in the same: but it is most certain that any bitter concoction whatsoever, used and applied as aforesaid, will not leave any Grashopper about your field; for any bitterness is such an enemy unto them, that they cannot live where they feel any taste thereof.

Of Moles. The last offence of living Creatures belonging to Corn or Grain are Moles, which not only feed upon it after it is sprouted, and spindled, by eating up the roots thereof, and so consequently by killing the whole Corn; but also their digging and undermining of the earth, do root up the Corn and destroy it in most wonderful manner, for where they make their haunts, or are suffered to dig, there they will destroy almost half an acre in a day: neither make they choice either of grounds or grain, for all grounds and grains are alike, if the ground be not too wet or subject to Inundations, or over-flows (as for the most part Corn grounds are not) for above all things Moles cannot indure wet ground, or earth of too moist a quality.

The Cure. Now the best Cure or prevention against these Creatures, is, to find out the trenches and passages, which are most plain & easie to be known by the turning up of the new earth, and digging cross holes in the same, to watch either the going forth, or the coming back of the Mole, and when you see her cast, to strike

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her with an iron fork made of many grains, as eight or six at the least, and so to kill and destroy them, which is so generally known amongst Husbandmen, that it is become a trade and occupation among them, so that it needs no farther description; and the rather, in as much as for three or four pence a score, you may have any ground cleansed of Moles whatsoever.

Now there be some others which have not this art of killing or catching of Moles, which only do take brimstone and wet stinking straw, or any thing else that will make a stinking smoak, and putting fire thereto, smoak all the places of their haunts, and by that means drive them all clean away from the corn lands: many other practises they have, but none so good, certain, and probable as these already declared.

Offences from the influence of the Heaven.

Thus far I have spoken of those offences which proceed from living Creatures, I will not treat of those which come and grow from the influence of the Heavens, being malignant vapours, which striking into the earth, do alter the sweet and pleasant nourishment thereof, and change it into bitterness and rottenness, whereby the Corn is either slain out-right, withered and made lean and unkindly, or else the kernel turns to a filthy blackness, being bitter, dry and dusty, like unto smoak, which the Husbandmen call smuttiness, or mildew. It cometh also another way, as namely, by over-rankness, or too much fatness of the earth, and this hapneth most commonly only to Wheat; for if blackness happen to any other grain, it cometh of blastings, or other malice of the Stars, for rankness of the ground is in Barley, Rye, or Oats only, make them lie flat to the ground, the stalk not being able to support the multiplicity of the ears, and so by that means the grain wanting his true nourishment, grows withered, and of no validity; now that this is most easie to be found out, the rankness of the growing Corn rising as it were in close bundles together, and the deep blackness of the green blade will with small travel shew you.

Of Smuttiness and Mildew.

This to cure and prevent, it shall be good before you sowe your grain, to sowe your land lightly over with Chalk, for that will abate his over-rankness.

The Cure.

There be other malignant qualities which proceed from the influences of the Heavens, or rather from the qualities of the Planets.

Additions.

Planets or Elements, which do many dangrous hurts unto Corn, as namely the Hail, the Lightning, the Thunder, or the Planet-ſtruck, or Blaſting, for all which the antient Husbandmen have ſuggeſted ſeveral Cures: as namely for the Hail, to plant the White-vine, or ſtick the branches thereof in the Corn-field: for the Lightning, to cloſe a Hedge-Toad in an earthen Pot, and burying her in the Corn-field, or to plant or hang up the feathers of an Eagle, or a Seal-skin, or to ſet Lawrel therein; for the Thunder, to Ring Bells, to ſhoot off great Ordnance, or to burn ſtinking weeds in the Corn-field: And for Blaſting, to take the fair horn of an Oxe, and mixing it with dung, to burn it in the Corn-field, or to take the Branches of the Bay-tree, and to plant them in the Corn-field: But, in as much as all theſe, and many other the like, ſmell rather of Conjuration, Charm, or Exorciſm, then of any probability of truth; I will neither here ſtand much upon them, nor perſwade any man to give further credit unto them, than as to the vapours of mens brains, which do produce much, many times out of meer imagination; and ſo I will proceed unto thoſe things which are of far greater likelihood.

Of Froſts. The next evil which hapneth unto Corn or Grain, is that which cometh by froſt and ſharp-nipping colds, which ſtarving the Root, and binding up all nouriſhment, maketh the Corn dry, wither, and never proſper; and, than the violence of the froſts, there is nothing more bitter to Plants and Seeds; for, even Raſor-like, it cutteth the veins and ſinews in pieces, and as ſharp needles pricketh the heart of every growing thing: For as the fire which is moſt hot, when it rageth, burneth, and conſumeth all things; ſo the froſt, which is moſt cold when it continueth, ſtarveth and choaketh, or ſtifleth whatſoever it embraceth.

The Cure. Now the Cure or prevention for thoſe evils which do happen to grain by theſe great froſts, is as ſome Husbandmen ſuppoſe, to cover the Land over when it is ſown with aſhes; others ſpread ſtraw or rotten litter upon their Corn, and not any of them but is ſufficient to prevent the worſt injury that froſt can do.

Miſts and Fogs. The moſt malignant quality which offendeth grain, is miſt and

and fog; which being naughty vapours drawn from the infected parts of the earth, and fall upon the Corn, do not only make the grain leprous, but alſo infecting the better earth after the kindly nouriſhment thereof, and as it were diſtilling corruption in the veins, makes all that depends thereupon moſt leprous and unwholſom, and thereupon altereth the quality, quite turning ſweetneſs into bitterneſs, fulneſs into emptineſs, and goodneſs into bdneſs, to the great loſs of the Husbandmen, and the much diſreputation of the ground.

Now the Cure and prevention of this evil, according to the opinion of all the beſt Husbandmen, is, to take weeds green, the twigs of bramble, and other bruſh woods, wet ſtraw, or ſuch like ſtuff, and binding them up in great bundles, to put fire thereto, making a great and violent ſmoke, and then taking the advantage of the wind, to walk up and down the field and ſmoke it, which is thought a certain remedy to take away thoſe inconveniencies which happen by the venome and poyſon of theſe miſts and fogs. The Cure.

Now to conclude, of the diſeaſes and infirmities which happen to Corn whilſt it is in the field, there is not any formerly ſpoken of more dangerous, or of vilder quality than the reaping, mowing, or gathering in of Corn wet, or too green, and unhardned; for ſuch moiſture, when the Corn is ſheaved up cloſe together, or ſtackt or mowed up, forthwith gathereth heat, and either ſetteth the Corn on fire, or elſe the moiſture being of leſs quantity, and not apt to flame, yet it corrupteth the grain and ſtraw, and breedeth a ſtinking mouldineſs or rottenneſs about it: ſo that the Grain either becomes dung or dirt, or at leaſt ſo ſtinking and unſavory, that it is good for no uſe or purpoſe, as is daily ſeen where careleſs Husbands gather in their Grain without reſpect or Government, making the old Proverb, *That haſte ever brings waſte.* Corn reapt wet.

The Cure and prevention of this evil, is the well-husbanding and managing of the Harveſt, as firſt with a careful and well-judging eye to look upon your Corn, and to know by the hanging downward of the ear, looking as it were back to the ground, and by the hardneſs of the Grain, whether it be ripe or no; then looking to the cleanneſs of the Corn, as whether it The Cure.

be full of greenneſs, as graſs, weeds, and ſuch like: or clean of it ſelf without any mixture: if you find there be any weeds mixt with it, then you may reap it ſo much the ſooner, though the kernel be not ſo well hardned as you would wiſh: and above all things, have a care never to ſhear Corn in the rain or wet, no, not ſo much as with the mornings or evenings dew upon it, but even in the heat and brightneſs of the day. Then having reapt your Corn ſo full of graſs and weeds, you ſhall by no means ſheaf it, but ſpreading it thin in the Sun, let the graſs wither all that day, which when you perceive to change colour and grow dry, then bind it up in ſheaves, and let it lie ſingle a day, that the wind and Sun may get into it, and dry the greens more ſufficiently; then lay it in ſhocks of ſix or eight ſheaves apiece, and in thoſe ſhocks, turn the ears ſo inward, that the other bigger ends may defend them from all the rain, wet or dew that may fall upon them: then a day or two after, lay them in ſhocks of twenty, or four and twenty ſheaves apiece, and in thoſe ſhocks, let them take a ſweat: then break them open in a bright Sun-ſhine day, and letting the air paſs thorow them, to dry them, forthwith lead the grain home, and houſe it or ſtack it in ſuch ſort as was ſhewed in the former Chapter, and be ſure the grain thus ordered and dried can never take hurt: but if the ſeaſon of the year fall out ſo extraordinary evil and full of wet, that by no means you can get your Corn dry home, (which although it be ſeldome ſeen, yet it is poſſible to be ſeen) in this caſe you muſt bring it home as well as you can, and having your Kilne well ordered and bedded, you ſhall lay as many ſheaves thereon, as it can contain, and turning and toſſing them over a very gentle fire, by ſlow degrees, dry them very perfectly as near as you can, with no greater a heat than that which the Sun giveth, and then mow and ſtack them up at your pleaſure, for the air will ſweeten them again, and take away all ſmell or ſmoke or other annoyance; only obſerve, not to ſtack them up whilſt the fire or heat is in them, but when they are cold, and ſo they will be as ſweet as may be.

Of Corn waſht.

Now it is not amiſs that I ſpeak here a word or two of waſht.

waſht Corn, or the waſhing of Corn: True it is (as before I have written) that all ſorts of Wheat whatſoever are ſubject either by the rankneſs of the ground, blaſting or elſe mildewing, to a kind of filthy ſooty blackneſs, as is already ſhewed; and this ſooty Corn is taken two ways, generally and particularly: generally, if the whole Land be ſtricken, and no Corn ſaved, but all ſpoiled, which is called mildewed; or particularly, where but ſome certain ears are ſtruck, or ſome certain part of the grain, as when it is black at both ends, yet full and ſound in the middeſt, and this is called ſmutcht Corn, being diſfigured in part, but not in all. This ſmutcht Corn, which is ſtricken here and there, if the blaſted ears be not culled out from the other, which to do is an Husbandry exceeding good and very worthy) when it cometh under the flayl, the duſt of thoſe black blaſted ears will ſo foul all the reſt of the Corn, that it will look black and ill-favoured, and ſo become unſerviceable and unmarketable, for the blaſted Corn is both bitter and unwholſome: In this caſe, you muſt of force waſh this Corn, and you muſt do it in two or three waters, till you ſee all the blackneſs quite gone; which done, then drain away your water clean, and laying the Corn on fair window cloaths, or coverlids, lay it in the heat of the Sun, and ſo dry it again till it be ſo hard that it will grind: But if the time of the year will not ſerve for the Suns drying it, then you ſhall dry it on a Kiln, with a very ſoft and gentle fire, and then cool it in the air to recover the ſweetneſs again, and then the Corn is as ſerviceable as any other: only for Seed it will by no means ſerve, both by means of the blaſting, which makes the kernel imperfect at both ends where it ſhould ſprout, as alſo the too much drying thereof, by which it is ſo much hardned, that the ground hath no ſtrength to reſolve it; therefore it is the Office of every Husbandman when he chuſeth his Seed-Corn, to eſchew by all means this waſht Corn as a Grain that is loſt in the earth, and will by no means grow.

Therefore that you may know waſht Corn from all other Corn, and ſo not to be cozened by any deceit in the ill Husbandman, you ſhall take it up in your hand, and if the Corn To know waſht Corn.

look bright, clear, and ſhining, being all of one intire colour, without change or difference, then be ſure the Corn is unwaſht and perfect.

But if you find it look whiter at the ends than in any other part of the Corn, and that the whiteneſs is black and not ſhining, ſo that there is a changeable colour in the Corn, then be aſſured that the Corn is waſht, and then by no means apt for Seed or increaſe.

Again, put three or four grains into your mouth, and chew them, and then if the taſte be ſweet and pleaſant, and grind mellow and gently between your teeth, then is the Corn not waſht; but if it have a bitteriſh, or fleſhy raw taſte, and grind hard between your teeth with much roughneſs, then hath the Corn been waſht, and dried again; and is not good for Seed; alſo when Corn is more than ordinarily moiſt, or more than ordinarily dry, both are very ill ſignes, and ſhew either imperfect Corn, or imperfect keeping, for the beſt and good Corn indeed, ever holdeth an indifferent temperature, betwixt drineſs and moiſture.

CHAP. XVIII.

How to keep all manner of Grain, either thraſht or unthraſht, with leaſt loſs the longeſt time; and how to preſerve it from all infirmities, and Vermine in the Houſe or Garner.

Keeping of Corn two-fold.

TO proceed to the keeping and preſerving of Corn and Grain, it is to be underſtood, that it is to be done two ſeveral ways, that is to ſay, in the Ear, and out of the Ear; in the ſtack, when it is cleanſed and dreſſed.

Keeping Corn in the ear or in the chaff.

Touching the keeping of Corn in the Ear, or in the Stack, there is no better nor ſafer way than that already deſcribed in the ſixteenth Chapter, being free from all offences whatſoever, that can come to hurt it.

Now there be others that cut off the Ears of their Corn, and then put them into great Cheſts or Hutches of wood (ſuch as are very frequent and much uſed in *Ireland*, and other Countries where War rageth) and ſo keep it ſweet and good many years:

Others,

Others uſe to beat it out of the ear, but not ſeparate it from the Chaff, and then laying a lear of the Straw more than a foot thick, to lay a good thick lear of the thraſht Corn; and thus lay lear upon lear, till you have made up your ſtack, in ſuch proportion as you ſhall think convenient; and this will keep all kind of Corn, or Grain, or other Seeds, ſound, ſweet, and fit for any purpoſe, at leaſt a dozen years, or more, as ſome have ſuppoſed, without either too much drying, withering, moiſtening, or moulding. And ſurely this is a very excellent way for the ſtoring up of much Corn in a very little room, and may as well be done with Corn as with ſtraw; only it is not to be done in Barn nor Houſe, becauſe Mice, Rats, and other kind of Vermine will work much deſtruction thereupon, but on a Stack or Hovel made and proportioned in ſuch form as was ſhewed before in the ſixteenth Chapter, and ſo it will ſtand ſafe without all annoyance, as long as it ſhall pleaſe the owner to keep it; ſure I am, it will laſt thus fully twelve years; yet ſome Authors affirm, it will laſt fifty years, but that is a ſpace of years beyond my trial.

Keeping of Corn out of the Ear or dreſt.

Touching the keeping of Corn after it is thraſht and dreſt, it is divers ways to be done, as by ſtowage or place of lear, as Garners, Hutches, and ſuch like, by labour and induſtry, as with the ſhovel, or elſe by device or medicine.

Of Garners.

For Garners, they be made divers ways. according to the nature of the Country, and cuſtom of the people.

Some are made with clay, and ſome trodden with hair, ſtraw chopt, and ſuch like: but theſe are the worſt, and do ſooneſt corrupt Corn; for althongh they are warm, which is a great preſervation to Corn, yet they yield duſt, and from that duſt is bred fleas, mites, weavels, and other Vermine which do ſpoil Corn, and make it eaſily rot.

Others are made of ſtone and lime, but they are ſubject againſt wet weather, to yield forth a moiſt dew, which corrupteth and rotteth Corn.

Others are made of Brick and Lime, and they are very good againſt the Weavel, and other ſmall Vermine, but the Lime is ſharp, and ſo conſequently very unwholeſome for all manner of Grain.

The beſt Garner that can be made to keep all manner of Grain in,

in, is made of playſter, burnt, and brought into morter, and ſo raiſing it up with the help of ſmall ſtones hidden and placed in the midſt of the wall, to make both the inſide and outſide of the Garner of ſmooth playſter, no ſtone being ſeen but hidden at leaſt two fingers thick on each ſide, and all the bottom alſo muſt be made of playſter; for no floor keepeth Corn ſo well, of what kind ſoever it be; and theſe Garners would be placed as near as you can to to the backs, or ſides of Chimneys, or as near the air of the fire as you can conveniently; for as there is nothing more cold then plaiſter, yet it is ever ſo dry and free from moiſture, that with no change of the air or weather it relenteth, but keepeth the Corn ever in one ſtate of goodneſs, whilſt the warm ſtanding thereof is ſuch a comfort in the winter, and the natural coolneſs of the thing ſo ſoveraign in Summer, that the grain ever abideth in one ſtate without alteration.

Now for Hutches, or great cheſts, bins, dry fats, and ſuch like, they are made of old, dry, and well-ſeaſoned Oak-boards, plained ſmooth, and cloſe joyned and glewed together, with covers and lids made alſo very cloſe, whereby little or no air can come in: ſome of theſe great Bins, or Hutches, made of dry boards, are made open and without covers, but they are not ſo good, for the air covering the upper-part of the Corn, and the middle part ſweating, breedeth corruption, or muſtineſs, which hurteth and ſpoileth the Corn: beſides, they are ſomewhat too warm, and thereby make any green Corn apt to corrupt and ſmell.

Of Hutches. Touching the uſe of Garners and Hutches, they are principally to keep Malt after it is dried, or Barley, which is for the uſe of bread or meal; and here is to be noted, that the beſt manner of keeping Malt, is to keep it in the Corn, that is to ſay, in the duſt, and other filth which cometh with it from the Kilne, as thus; when firſt you lay your Malt on the Kilne to be dried, you know there is at one end a certain ſprout, or ſmall thred, which grows from the Corn, and is called the Come, which by the rubbing and drying of the Malt falls away, and leaves the Corn clean, and ſnug of it ſelf, and when you trim and dreſs up your Malt for the Mill, is winnowed and cleanſed away: This you ſhall preſerve and put altogether into your Garner or Hutch, which

which will be ſo mellow and ripen your Malt, that in the ſpending thereof, a peck will go further, than a peck and a half kept of a contrary faſhion; and although ſome are perſwaded that this Come or Malt duſt, is a great breeder of the worm or weavel, by reaſon of the much heat thereof, being indeed of the pureſt of the heart of the Corn; yet it is not ſo, unleſs ſome rankneſs or moiſture do get to the Corn; and then it breeds weavels in infinite abundance, and therefore by all means be ſure that your Garners and Hutches do ſtand exceeding dry, and then there is no fear of the loſs of Corn, nor ſhall you need to dreſs or winnow your Malt but as you ſpend it.

Laſtly, here is to be noted, that although I here joyn Garners, Hutches, Cheſts, and Bins together, yet I make them not all of equal goodneſs; for the plaiſter Garner is abſolutely the beſt of all, the cloſe Hutch or Cheſt next, and the open Bin laſt; yet any, or all, ſufficient enough to keep Malt, Barley, or ſmall Seeds, divers years without imperfection.

It is written by ſome of the antienteſt Authors, that Wheat hath been kept in theſe cloſe Hutches or Cheſts ſweet, the ſpace of fifty years; yet I hold the rule ſomewhat doubtful, both becauſe Wheat of it ſelf, lying ſo cloſe packt together, is apt to heat and ſweat, and that heat commonly turneth to faultineſs, and the ſweat to corruption; but that it may thus be preſerved from worms, weavels, mites, and other vermine breeding in Corn, it is doubtleſs and infallible.

To preſerve Wheat.

Now for the preſervation of Wheat, which is the moſt principal grain, of greateſt uſe, and greateſt price, and therewithal moſt tender, and apteſt to take hurt, the experiments are divers, as mens fancies, and practiſes have found out; for ſome Husbandmen hold opinion, eſpecially the *French* and *Spaniſh*, That if you take the Lees of common Oyl (ſo it be ſweet) and ſprinkle it upon your Wheat as it lies, either in the Garner, or upon the floor, that it will preſerve it from all corruption and annoyance whatſoever; nor doth it preſerve Wheat only, but all other manner of grain whatſoever; nor doth it preſerve Corn alone from miſchief but if Corn by caſualty be tainted or hurt, it doth recover it again, and brings it to the firſt ſweetneſs; and if either worms or weavels be bred in it, the Oyl preſently kills

kills them, and frees the Corn from that miſchief; as for ſmaller ſeeds, as hemp, line and rape, this Oyl doth not only keep them long and ſound, but alſo feeds and nouriſhes them, and makes them better, either for the ground, or for uſe, either in the mill, or in Medicine.

There be others that uſe to take Chalk, and beat it to powder, and then ſcatter it amongſt their Wheat, when they put it into the Garner, and have found that thereby their Grain hath been wonderfully preſerved from all imperfection; and ſurely there is great reaſon for the ſame, becauſe the drineſs of the Chalk drinketh up the moiſture which ſweateth from the Grain, and is the firſt breeder of all putrifaction: Alſo it cooleth and aſſwageth the immoderate heat which is ingendred in the Corn, by reaſon of the packt and cloſe lying together.

Again, there be others which uſe to lay great ſtore of Worm-wood amongſt their Wheat, which likewiſe preſerveth it from all annoyances, eſpecially from Worms and Weavels, as alſo from Mice, Rats, and ſuch devouring Vermine; neither will the Corn corrupt or grow faulty, as long as the Worm-wood remains amongſt it. In *Italy*, the careful Husbands uſe to take a certain dry earth or clay, called earth of *Olinthus*, or *Cerinthus*, and this earth they beat amongſt their Wheat, and then put it into the Garner or Hutch, and it will keep it ſound and ſweet divers years together; then when they have occaſion to uſe, with ſmall reeing ſives to dreſs it from the Corn, and ſo preſerve the duſt, which will laſt and ſerve you many years together, even almoſt an age; as ſome have reported, and is at this day to be ſeen in many parts of *Italy*, and other places.

Again, I have for mine own part ſeen in the Iſland of the *Azores*, certain very great large Caves, or pits made under the earth, of the faſhion of a *Spaniſh* earthen Lear, that is to ſay, great and ſpacious in the midſt, and narrow both at the top and bottom, like a braſs Pot, or great glaſs Vial, and made as ſmooth within as may be, and in theſe caves or pits, they firſt lay chaff, and then their thraſht Wheat, filling it up full to the top, or within a handful thereof, which they fill again with Chaff, and then cloſing the top with a broad ſtone, they cover it

it over with earth ſo cloſe and unperceivable, that you may walk or travel over it without any ſuſpition; and for mine own part, I have my ſelf digged up many of theſe pits, and found great ſtore of Wheat, both in the High-ways, and other moſt ſuſpitious places; and ſurely it is thought, and experience in thoſe places makes it good, that in theſe Caves or Pits you may keep Wheat as long as you pleaſe, as *Pliny* ſpeaketh of, which is an hundred, or an hundred and twenty years, without hurt or putrefaction, either of heat, moiſture, worms, weavels, or any other Vermine whatſoever which conſumeth or devoureth Corn; yet how I may recommend this experiment to our Nation, I am uncertain, becauſe the much moiſture of our Climate, and the cold rawneſs thereof promiſeth a contrary effect; for the great enemies unto grain, are violent cold and moiſture, and with us it is very difficult to make any Caverns under the earth but they muſt be ſubject unto both: Therefore only to thoſe which live in hot ſandy Countries, high and free from ſprings or waters, or in dry and rocky grounds, where theſe mines or hollow places may be hewed out, as in a main and firm Quarry, I recommend the trial of this practiſe, with this aſſurance, that where the ground is fit for that purpoſe, as any of your ſand grounds or gravel earths, as in *Norfolk*, *Middleſex*, *Kent*, and many other ſandy Climates; or in rocky ſituations, as in *Nottingham*, *Bath*, *Briſtol*, and ſuch like, you may keep your Wheat good, ſound, firm, and free from all annoyances, even as long as you ſhall pleaſe to keep it, both without putrefaction in it ſelf, or waſte made by other devouring worms and vermin; but if in a more moiſt place, as in clay or other mixt earth, which ever is vomiting wet and dewiſh humours, you are forced to approve this experiment; then you muſt neceſſarily lime all your Cave or hollow Mines within, at leaſt half a foot thick with tyle ſher'd and plaiſter laid wall-like together, and then the plaiſter dawb'd at leaſt three fingers thick above all, and ſo you may keep your Corn as ſafe and as ſound as any hot ſoyl whatſoever; but without it your Corn will not endure a week without rottenneſs, faulineſs, mouldineſs, and ſtinking.

To conclude, having ſhewed you all the moſt approved and beſt experiments for the keeping and preſerving of wheat, there

is none better, or ſo good as this ſilly plain one, which I will here deliver: and that is, firſt, as near as you can, reap your Wheat at the change of the Moon; for Wheat which is ſo reaped, is ſeldom or never ſubject to loſs or putrifaction (being got in dry, or in husbandry manner ordered and handled) becauſe that Cœleſtial body hath ſuch a power and influence in the growth of Corn and Seeds, that as ſhe groweth, ſo they grow, and as ſhe waneth, ſo they abate and wither.

And truly for my own part, in my poor Husbandry, I have made this obſervation, that I have reaped Corn at the beginning of the wane (to mine eye and judgment) great, full, and boll'd as the Plow-man calls it, and within few days after, when it came to thraſhing, I have found it moſt poor, hungry, and ſmall Corn: nor could I give or find any other reaſon for the ſame, but that it was reaped in an ill and moſt unſeaſonable time: for, on the contrary part, I have ever found that Corn reaped upon the change, being ripe, full, and every way fit for the Barn (and the weather fair and dry above head) it hath never altered, but kept his firſt and perfect goodneſs; ſo that I cannot chuſe, but in this caſe think the obſervation of the Moon to be a thing of great effect and validity, appointed by God as a ſecond means for our help and profit: when therefore your Corn is thus ſeaſonably and well got in, you ſhall thraſh it, winnow it, and dreſs it ſo clean as you can, then carry it up into your Chambers or lofts appointed for that purpoſe, of whoſe floors by all means I would wiſh to be caſt of the beſt plaiſter; for boards is too hot, and clay is too apt to breed Vermine: On this plaiſter floor you ſhall ſpread your Wheat, not above a foot thick at the uppermoſt, and ſo let it lie, obſerving once in four or in five days at the moſt, with a large woodden ſhovel to turn the Wheat quite over and over, and thus doing, you ſhall be ſure to keep it as ſweet, ſound, and good, as when it firſt came into the Barn: for neither can the heat, ſweat, nor coldneſs offend it, the firſt being cooled and tempered by the opening and diſperſing; the ſecond dried up by the air which hath free recourſe unto it, and the laſt comforted by the labour and tolling of the ſhovel, caſting it up and down from one place to another: and though ſome curious Husbands may object, That this manner of keeping Corn drieth

it

it ſomewhat too much, and thereby diſableth it for ſome particular purpoſes, as for ſeed and ſuch like: yet in that they are much miſtaken; for this ſtirring and moving of Grain, is not a drying of it, but rather a great comforter and ſtrengthner of it, diſperſing back into the Corn, thoſe wholeſome vapours which ſhould do it good (by way of communication and fellowſhip with the Grain) and expelling thoſe ill humors which ſweating out of it would otherwiſe confound and hurt it, ſo that in concluſion, for the true and long keeping of Wheat ſweet, ſound, and perfect, without loſs or corruption, there is no way more ſafe or eaſie, than this laſt expreſſed, being of all other the beſt, although in ſhew it appear ſleight and trivial, as for the moſt part things of the greateſt moment in this nature do: but to the judicious Husbandman I refer it, whoſe aim is at the worth and ſubſtance, not at the words and curious gloſs, ſet forth in ſtrange ingredients.

To preſerve Rye.

Touching the keeping of Rye, or Maſlin, or, as ſome call it, Munck-corn, or Blend-corn, being part Rye, and part Wheat mixed together, that which preſerveth Wheat, will alſo preſerve it, for they are Grains of like nature, only the Rye is ſomewhat hotter and drier, and therefore will endure ſomewhat more moiſture: yet to ſpeak particularly touching the preſervation of Rye, there is nothing better than the plaiſter floor, and oft turning; the cloſe Hutch is alſo exceeding good, ſo is the Pipe or dry fat, but being once opened, and the air entring into the Corn, except it be ſoon ſpent, it will ſoon putrifie; for though in the cloſe keeping, it laſt long, yet when it comes to the air it will quickly receive taint. Laſtly, for the profit in keeping of Rye, indeed there is nothing better than to ply it, and tread it hard into Veſſels or Barrels, wherein ſalt hath been much lodged, or other brine or ſalt matter: provided always that the Veſſels be ſweet and untainted, no ways ſubject to faultineſs or other unſavoury ſmells, from which there is no preſervation.

To preſerve Beans.

Concerning the preſervation and keeping of Beans, which are indeed a more groſs and fatter Grain than any heretofore written of, and out of the fulneſs of their ſubſtance, more ſubject to moiſture and thoſe dankiſh humors which corrupt Corn:

The careful Husbandman obſerveth two Rule,,firſt,not to thraſh any Beans or Pulſe, more than for neceſſary uſe (as for the Stable or Mill) before it be middle *March*, at which time the Grain, having taken a kindly ſweat in the Mow, Stack, or Hovel, is become ſo dry, firm, and ſolid, that no floor, wall, or other place of Lear can make it relent, or give again (except great abuſe, and too moiſt keeping) for it is to be underſtood, that this ſort of Pulſe or Grain is of it ſelf ſo exceeding moiſt and apt to ſweat in the Mow, that all Husbandmen endeavour by no means to houſe it, or lay it within doors, but ſeek to make it up in ſtacks and hovels without doors;not ſo much that houſe-room is wanting, as that the benefit of the Sun, and Air, which pierceth through the ſame, drieth and ripeneth the Corn in ſuch kindly manner, as maketh it as ſerviceable as any other: and indeed,the firſt invention of ſtacks, hovels, reeks, and ſuch like, did not ſpring ſo much from the want of houſing, as from the good and profit which the Husbandman found to accrue to this kind of Grain, only by reaſon of laying it abroad; for it is certain, that Beans and Peaſe neither grow together, nor ripen together,but put forth their increaſe one after another; for you ſhall ſee upon one ſtalk, blooms, ſwads and ripe cods: ſo likewiſe in the gathering of Pulſe (when it is reaped from the ground) you ſhall ſee ſome dry and withered, ſome ripe, ſome half ripe, ſome abſolutely green, and as but now in growing.

Now all theſe muſt be reapt together, and if you ſtay them in the field till all be of like drineſs, queſtionleſs the oldeſt will ſhake and ſhed upon the ground before the youngeſt be ripened, and what that loſs will redound to, every Husbandman can judge: So alſo to houſe and mow up in a cloſe mow, the dry Pulſe with the green, ſurely the green cannot chuſe but inflame and heat the dry,and the dry ſo heated to give fire to the green, till both be either rotted or conſumed; and hence it came, that expert Husbandmen deviſed to lay their Pulſe,for the moſt part, over without doors, in ſtacks,reeks,and hovels, that the Sun and wind paſſing thorow them,might bring all the grain to an equal drineſs and hardneſs.

Again, Pulſe being of all grain the coorſeſt and fulleſt of ſubſtance,

ſtance in it ſelf, and the ſtraw ever big and ſubſtantial, and full of broad thick leaves, ever moiſt and ſappy; it muſt needs follow that this grain muſt ever be moſt apt to ſweat in the mow, and ſo neceſſarily craveth the greateſt ſtore of air, and the longeſt time in drying; ſo that to return to my firſt purpoſe, it muſt needs follow, that no Beans or Peaſe can be ripe or ſeaſoned in the mow, till it be mid-*March* at leaſt; for it is an old ſaying, among the beſt Husbands, *that a March wind is ſalt which ſeaſoneth all Pulſe:* And if uſe or neceſſity compel men to thraſh their Pulſe before that time, the Grain is ſo imperfect, that it muſt be Kilne-dried, or elſe it is fit neither for the uſe of Bread nor Provender.

Now herein is to be underſtood, that Peaſe or Beans which are Kilne-dried, may be kept ſound, ſweet, and good, either on plaiſter-floors, boarded-floors, or earthy-floors, the ſpace of many years, without turning, or toſſing; nor need you to reſpect how thick the heap lie, ſince Beans after they are once dried on the Kilne, or in the Sun, never after will thaw, give again, or relent, but remain in their firſt ſoundneſs: But if you preſerve your Beans for other uſes, as to boyl in your pot, and feed your Servants withal, as is uſed in *Somerſetſhire*, and many other Weſternly parts of this Kingdom, then it ſhall be good for you to take Oyl-barrels, Oyl-cask that is ſweet, and firſt calk them all over within and without with aſhes, and then put your Beans therein, and cloſe up the heads, and as it is affirmed by divers great Authors of Husbandry, it will keep Beans ſound, ſweet, and good, twenty years; nay, ſome give inſtances of Beans which have been thus kept and preſerved the ſpace of one hundred and twenty years; and ſurely I am perſwaded that if Beans be well and dry got, at thraſht at a ſeaſonable time of the year, as in *March*, *April*, that thus kept, they will laſt the uttermoſt of a mans pleaſure.

Preſerving of Peaſe or Fetches.

Now for the keeping or preſerving of Peaſe or Fetches, which of all other Grain whatſoever, is moſt ſubject to rottenneſs and imperfection, becauſe out of its own nature it is apt to breed Worms, Weavels, and Mites, by reaſon of the much luſhiouſneſs and ſweetneſs of the kernel of the Grain: you ſhall in all things obſerve the ſame courſes that you do with your

Beans,

Beans, both touching your gathering, drying, ſtacking, and alſo thraſhing; for as they are moſt apt to go together, being near of nature and condition one to the other, ſo it is fit that you do apply unto them one and the ſelf ſame Medicine or remedy.

And herein is to be noted, that as Peaſe are of more general uſe then Beans, as for Horſe Provender, feeding of Swine, Pidgeons, Pullens, and ſuch like; as alſo for Bread, Pottage, to boyl with or without meat; for certainly, it is a moſt wholſome and ſtrong food, as may be ſeen by the people of *Devonſhire*, *Cornwal*, and *Somerſetſhire*, of whoſe great ſtrength of body not any reaſon can be given more probably than their much feeding on this grain, and their acquaintance with much and ſtrong labour: So they ought with more care and circumſpection to be preſerved from all thoſe annoyances that naturally are apt to hurt them, as worms, rottenneſs, mould, muſtineſs, and ſuch like.

And firſt, there is nothing better for the long and well keeping of Peaſe, then the very well drying of them, either in the Sun, or on the Kilne, eſpecially thoſe which you uſe for Bread, Provender, or feeding of Swine: and although ſome Husbands uſe to feed Swine with undried Peaſe, nay, many times both undried and undreſt, that is to ſay, the Pulſe or Chaff not taken away; and are of opinion that the Grains ſo given, ſooner feedeth and fatteth up Swine than the other, yet they are deceived; for albeit it ſwell and puff up a Beaſt, yet is the fleſh and fat neither ſo good, ſound, and long laſting, as that which is gotten with dry food, nor doth it make a Swine ſo thirſty; and the Husbandman is ever aſſured, that when his Swine drinks not well, he feeds not well: therefore what Peaſe you keep for Bread, or feeding of Cattle, by all means dry them well, and lay them either in Garners or Floors, and they will laſt ſound and good without breeding worms or weavels, as long as you pleaſe. But thoſe which you keep for food at your own Table, as in Pottage, or other uſes, muſt by no means be too much dried, becauſe then they ask a double time in boyling, and ſpend a double quantity of fewel in their preparing.

Some

Some uſe after they be clean thraſht and dreſt, to lay them in a cool cloſe Garner, either of Plaiſter, Earth, or Boards, of which Plaiſter is the beſt; as for any thing that relenteth, or yieldeth moiſture, as lime, ſtone-walls, or ſuch like, it is moſt hurtful, and immediately maketh Peaſe mould and rot: alſo it is good to lay your Peaſe in thick heaps in your Garner, for that will preſerve them moiſt the longer time; but to ſpread them thin upon the floor, by which means the Sun, Air, and Wind may paſs thorow them, is not ſo good, for it drieth them too ſore, and taketh from them much of their ſweetneſs and goodneſs, which ought moſt carefully to be preſerved. There be others which preſerve theſe tender meat Peaſe by thraſhing them up, and then letting them lie in their own Pulſe or Chaff, and not dreſſing them, but as they have occaſion to uſe them; and queſtionleſs this is a very good and laudable way; for the Pulſe and Chaff doth maintain them ſweet and moiſt, and yet keepeth them withal ſo warm and comfortable, that they laſt much longer, than any other way whatſoever; and in this manner of preſerving Peaſe is to be noted, that by all means you muſt let them lie upon a dry earthen floor, ſo long as they are in the Chaff, rather than on the board, or on Plaiſter, and yet in this caſe the boards are better than Plaiſter.

Laſtly, and which indeed is the beſt experiment of all other, if you intend to keep Peaſe any extraordinary long time, you ſhall take Barrels or dry Casks, well and ſtrongly bound, and pitch them within exceeding well with the beſt Pitch or Bitumen that you can get, and then ſprinkle the Pitch all over with ſtrong Vinegar; then take your Peaſe, being clean and well dreſt, and put them into the Barrels, preſſing them down cloſe and hard; then head up the Barrels, and let them ſtand dry and cool, and they will preſerve your Peaſe ſound, ſweet, and good for any uſe whatſoever, as long as you pleaſe, be it for ten, twenty, or thirty years, according to the opinions of ancient Husbandmen, and other Provant-Maſters, that have lived and commanded in Towns beſieged, and Towns of Garriſon; neither ſhall any worm, mite, or weavel ever breed in it, or offend it; nay, if any have in former time.

time been bred in them, this manner of keeping the grain killeth them, and deſtroyeth them for ever.

Preſerving of Lentils or Lupins.

Now there is another ſort of Pulſe, which are called Lentils or Lupins, which albeit they are not ſo generally uſed for the food and ſuſtenance of man, yet they are for Horſe, Swine, and other Cattle, as much in requeſt as any grain whatſoever, and indeed do feed fatter, and ſooner than other ordinary Pulſe, and the fleſh ſo fed, is ſweeter and pleaſanter both to the eye and to the taſte, than that which is fed with Beans or Peaſe; alſo they are a Pulſe very Phyſical and good for many Medicines, as may appear by the works of many learned Phyſitians; and theſe the longer they are kept, the better they are, and fuller of profit. To preſerve them in good and ſound eſtate, it is meet to reap them in very fair weather, and to ſtack them up exceeding dry, and if they be laid in the Barn, or any cloſe houſe, it is not amiſs; for they will indure houſing better than any other Pulſe, yet the ſooner you beat them out of the ſtraw, or thraſh them up, the better it is; for Husbandmen ſuppoſe there is no greater hurt to this kind of Grain, than the long keeping it in the ſtraw; for it is of ſuch rankneſs, that the very ſtraw and cods breed in it much puttefaction; and I my ſelf obſerved both in *Spain*, and in the neighbouring Iſlands, where is great abundance of this kind of Grain, that they do no ſooner gather it and bring it home, but immediately they thraſh it; nay, ſome thraſh it in the fields upon the Lands where it grows, and ſo bring it home, and then ſpread it on fair boarded floors in very great heaps, or lay it up in cloſe Hutches, or Bins, ſuch as wheat, and other white grain is to be kept in. If you dry this kind of Pulſe in the Sun, or upon a kilne, with a very moderate and ſoft fire, and then lay it up either in a cloſe Garner, or cloſe Hutch, it will laſt many years ſound, good, and without corruption. There be other Husbandmen which mix with this grain, when it is thraſht, a half part of hot, dry, white ſand, or at leaſt cover the whole heap of pulſe with the ſand, and do find that it keeps the grain very ſound and good many years together. But to conclude, if you take ſtrong vinegar, and a good quantity of *Laſerpitium*, diſſolve and mix them very well together, and then having laid your Lentils or Lupins together on

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a fair boarded floor, in large, broad, and flat heaps, about two foot, or two foot and a halt thick; with the vinegar and *Laſerpitium* ſprinkle over all the heap, and not any change of weather, froſts, worms, or other vermine ſhall do them hurt, but they ſhall remain ſound and good as many years as you pleaſe to keep them: there are other Husbandmen, that inſtead of this before rehearſed, take only ſweet Oyl, and ſprinkle it all over the Grain, and find the ſame vertue and effect, for neither worms nor other Vermine will touch it, nor will the radical humour thereof at any time waſte or decay, but remain ſtrong, full, and ſound, without any kind of diminiſhing; nor ſhall you find any abatement of it, or ſhrinking in the meaſure, but that which was a buſhel this year, will be alſo a buſhel the next year, and as many years after as you pleaſe, which is no ſmall profit to the owner.

Whereas on the other part, if the Grain be either dried in the Sun, on the Kilne, or by the Wind, you ſhall hardly have of every ſuch buſhel ſo dried, three pecks and a half again, which is by computation at every quarter, which is eight buſhels, full one buſhel loſt, and yet this purchaſe thus preſerved, as beforeſaid, ſhall be as good for any uſe whatſoever; fit for ſuch Corn to be imployed in, as any other dried grain whatſoever, and yield as much every way, and altogether as good meal, and as good meat.

Now touching the preſerving and keeping of Oats, it is to be underſtood, that of all grain it is leaſt caſual, becauſe of it ſelf naturally it breedeth no evil vermine, and is again preſerved and defended with a double Husk, whereby neither cold, moiſture, heat, nor drineſs, is able ſo ſoon to pierce and hurt it as other grains, which are more thin clad and tender; yet becauſe it is of great and neceſſary uſe both for Cattle and Pullen, and that neither the Husband nor Houſewife can well keep houſe without it, you ſhall know, that the beſt way to preſerve it longeſt, is, after it is thraſht, to dry it well, either in the Sun or on the Kiln, and then either put it in a cloſe Garner, or cloſe Cask, and it will keep many years ſound and ſweet. Preſerving of Oats.

Touching the preſerving of Oatmeal, which is the inner Kernel of the Oats, and a grain of moſt ſpecial uſe in the Husband-

bandmans houſe, as in his Pottage, in his Puddings, and in many other meats neceſſarily uſed for the labouring man; it is an experiment not altogether ſo curious as any of the reſt formerly written of, for no Oat-meal can be made, but the Oats muſt be exceedingly well kiln dried, or elſe the kernel will not part from the hull, and being dried, as is fit, that drying is ſufficient to keep and preſerve the Oat-meal divers years.

Provided ever, that preſently after the making of your Oat-meal, you put it into dry cloſe Cask, or dry cloſe Garners (but Cask is better) and ſo that it may remain exceeding dry, (for any thaw or moiſture corrupts it) and as near as you can, let it have (if it be poſſible) ſome air of the fire, for the warmer it ſtands, the better and longer it will laſt, as experience ſheweth.

Preſerving of any meal.

For the preſerving and long keeping of any ſort of meal, there is no better way than firſt to boult and ſearſe him from his bran, for the bran is very apt to corrode and putrifie the meal, and to bring it to a faultineſs or muſtineſs: then into very ſweet and clean dry cask cloſe and well bound, tread in your meal ſo hard as you can poſſibly tread it, and then head it up cloſe, and ſo you may either keep it by land or water ſo long as you pleaſe, and when you have any occaſion to ſpend of it, be ſure to looſen no more of the meal than you preſently uſe, for the faſter and cloſer the meal lieth together, the longer and ſweeter it will laſt, for it is the gathering of the air that only corrupts it.

And here is alſo to be noted, that you ſhould not preſently as ſoon as your meal is ground, boult it from the bran, but rather let it lie a week or fortnight in the bran, in ſome cloſe bin or trough, and then after that time boult or ſearſe it, and you ſhall find it to afford you in every buſhel, more meal by at leaſt half a peck, than if you ſhould preſently boult it as ſoon as it comes from the mill; whence it proceeds, that the cunning and skilful Baker will ever have a week or fortnights proviſion of meal before hand, which lying ſo long in the bran, pays double intereſt for the continuance.

Now if it fall out ſo, that either by trade or merchandiſe, or other occaſions, you buy any meal by way of tranſportation, which is caskt up, (as much meal is ſold by the barrel) you ſhall preſently as ſoon as you have bought it (if it be for your own

uſe

uſe or expence) break open their heads, and empty the meal upon fair ſheets on a clean floor, and then ſpreading it abroad, let the Sun and Air paſs thorough it, which will dry up the ſweat; and if there be any taint of faultineſs, take it away, and bring the meal to his firſt ſweetneſs, and then immediately boult out the courſe bran, and after, as was before declared, tread it hard into freſh and ſweet cask; and thus you may keep your proviſion of meal all the year long: nay, if need require, two or three years; for after the firſt ſweat is taken away, and kindly dried, there is no doubt to be made of any that ſhall follow after.

Preſerving of all ſmall ſeeds.

Laſtly, touching the preſervation and keeping of all manner of ſmall ſeeds of what nature and quality ſoever they be, whether Hemp, Lime, Rape, Muſtard-ſeed, or any other Garden-ſeed whatſoever, though truly and properly they laſt but one year, nor are fit for Seed or Increaſe after that date expired: yet in as much as they are medicinable after, and a much longer time; therefore you ſhall underſtand, that the beſt way to keep them ſafe and ſound, and fitteſt for uſe and profit, is, firſt to gather them as ſoon as you perceive them to be ripe, and the weather being bright, clear and dry, then you ſhall dry and wither them in the ſhade, and not in the Sun, eſpecially upon a plaiſtered floor, where the Sun looketh to the South, and be ſure that as little Sun and moiſture come to them as you can, for both are main enemies; which done, bind them up in bundles without thraſhing, and ſo hang them up, and keep them in their own cods, and they will laſt for all uſes, a full year, and for ſome particular uſes two or three years; and in this manner you may alſo preſerve all manner of herbs, weeds, flowers, roots, and the barks or rinds of all manner of trees.

CHAP. XIX.

How to keep Grain, either for tranſportation by Sea, or for uſe in a Town of War or Garriſon, from one year to one hundred and twenty.

TO ſpeak of the Grains and Pulſes which are meeteſt for the Sea, and their ſeveral uſes.

The uſe of grain and Pulſe at Sea. Of Rice and the Uſe.

It is to be underſtood, that the beſt and principalleſt Grain which is indeed both moſt ſweet, moſt freſh, moſt pleaſant in taſte, and moſt laſting, is Rice, which although it grow not much in our Kingdom, but that we are beholden to our good Neighbours for the trade thereof, yet it is in ſuch plenty where we fetch it, that we need neither complain of the ſcarcity, nor the coſt, and ſo much the rather, in that a peck thereof will go further then a buſhel of any other Grain: Of this Rice is made many good and wholſome diſhes, ſome thick, ſome thin, ſome baked, ſome boyled, as thus: If you take a quarter of a pound of Rice, and boyl it in a pottle of water, till it come unto an indifferent thickneſs, and then put it into a good lump of potted or barrelled butter, and as much Sugar as ſhall ſalt-wiſe ſeaſon it to an indifferent ſweetneſs, it is a diſh of meat meet for an Emperour at Sea, wholeſome, good, and light of digeſture, and will be as much as four reaſonable men can well eat at a meal; for the nature of Rice is ſuch, that it will ſwell in boyling, and grow to that bigneſs, that in an inſtant it will thicken a pottle; ſome uſe the night before they boyl it, to ſteep it in ſo much water, as will only cover the Rice all over, and then the next day boyl it in a pottle of water or more, and the Rice ſo ſteeped will ſo ſwell, that all the firſt water will be drunk up, and a great deal of leſs boyling will ſerve to make it ready; and ſure, than this a man cannot find a cheaper way to feed men, ſince one pint of water, and the fourth part of a quarter of pound of Rice (which come not to above half a penny at the deareſt reckoning) is a meal ſufficient for a mans eating, having Biſket and Drink proportionably. And this diſh of meat being thus thin boyled, is called Sea Lob-lolly, and after ſalt feeding, is wondrous wholeſome and comfortable to any man whether he be ſick, ſound or diſeaſed, and both abateth infirmities, and haſteneth the healing of all wounds.

There be others, that after they have ſteeped this Rice (as afore-ſaid) do then boyl it in like manner, till it be ſo thick that a ſpoon may ſtand upright in it, and no liquidneſs of the water perceived; then put a good lump of butter into it, and boyl it with it, and ſtir it about, and it will make it come moſt clean out of the pot in which it is boyled; then ſeaſon it with

Sugar

Sugar, and a little Cynnamon, and it will be a diſh of meat right good and delicate, and meet for any man of what Quality ſoever, that is worth goodneſs or preſerving; nor need the quantity exceed the proportion already preſcribed.

Again, if you have Meal in the Ship, if you take of this Rice ſteeped in water, and a little lightly boyled and ſeaſoned with Sugar, Cinnamon, and Ginger, and a good quantity of Butter, and then bake it in little Paſties, you ſhall find it a moſt delicate pleaſant, and wholſome meat, and that a penny in it ſhall go further, and give better contentment than four penny worth of Beef, Bacon, Fiſh, or any other hard ſalt meat; yet I do not wiſh any man of Ship-board to make this a continual feeding diſh, for then it is both too pleaſant and too ſtrong, and where evacuation of ſome humours are wanting, may breed inconveniences in ſtrong bodies; but rather uſe it once a week as a Phyſical nouriſher, or for the comfort of ſick and diſeaſed men, whoſe ſtomachs are tane away, or elſe weakned; there may be made alſo of this Rice in time of neceſſity (being ground to a fine meal) an excellent good Bread or Rusk, which is pleaſanter, ſweeter, and much longer laſting than any made of Wheat, or any other Grain whatſoever; beſides many other Seeds, which would in this place ſhew but too much curioſity to repeat.

Wheat, and the uſe.

The next Grain unto Rice, which is of eſtimation and great ſervice at Sea, is wheat, of which although there be divers kinds, yet they are all alike for the ſerving of this purpoſe; only the large and thick hull'd wheat being well dried will laſt the longeſt, but the ſmall and fine skinn'd Wheat yields the purer flowr, and makes the better Meal: Now of this Wheat is made divers diſhes of meat, for ſome take it, and bruiſe or beat it in bags till the upper skin be beaten off, and then having dreſt and winnowed it, boyl it in clean water till it burſt, and grow as thick as Pap, then take it from the fire, and being hot, put it into ſeveral diſhes of wood, or trays, ſo much in every diſh, or tray, as may ſerve four men, and ſo let it cool, then give it to the ſick or ſound as you ſhall be directed, and it is an excellent good meat, either cold or elſe hot, and a little butter melted with it, or being again boyled in freſh water, and ſeaſoned with Salt and a little Sugar, it makes an excellent Grewel, or Loblolly, which is a very ſove-

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reign at Sea. Alſo your parched Wheat is a very good food at Sea, and of much requeſt and eſtimation, being ſprinkled with a little ſalt; and of this food a little will ſerve a man at a time, by reaſon that the much ſweetneſs thereof ſoon filleth and cloyeth the ſtomach, yet it is wondrous light of digeſtion, and breeds great ſtrength, and much good blood, as we daily find by experience.

Of Oat-meal and the uſe.

The next Grain unto this which is to be recommended to the Sea (and which is indeed not any thing inferior to either of the other going before, both for ſtrength and laſting) is Oat-meal, which by reaſon of the great drineſs, and drying thereof, feels little or no imperfection at the Sea, as being unapt to ſuck or draw in any of the ill or moiſt vapours thereof. Of this Oat-meal is made many good freſh, and comfortable meats at Sea, as Grewel, or Lob-lolly, by boyling it in freſh water, and ſeaſoning it with Salt, and (if you have it continually) ſometimes with Sugar and a few Currants, and a little Mace, which is meat of great ſtrength and goodneſs, eſpecially for ſuch as are ſick and weak; for it is a great reſtorer of nature, and a purger of the blood; alſo to ſteep the whole Grotes of Oat-meal a night in water, and then draining them, and putting it in a bag, boil it till the Grots break; then putting it out of the bag, butter it with butter, and it is excellent food; as alſo boyling Oat-meal in freſh Water with Barm, or Dregs, and the hinder-ends of your Beer-barrels, makes an excellent good pottage, and is of great uſe in all the parts of the Weſt-Country, eſpecially where Mariners or Sea-men live, and are called by the name of Drouſſon pottage. Alſo, of Oat-meal is made that meat which is called in the Weſt, Waſhbrew, and may be made at the Sea at your pleaſure, being a meat of that great account amongſt *Devonſhire* and *Corniſh* men, that they will allow it to be a meat of ſingular great ſtrength and goodneſs, and withal ſo light of digeſtion, that a man can very hardly ſurfeit upon it at any time; and I am the rather induced to believe the ſame, becauſe I have obſerved and ſeen many of the labouring men of that Country to eat ſuch an unmeaſurable quantity thereof, that in mine eye one mans Supper would have ſerved a whole family.

But

But you will ſay, Hunger and labour are ſuch excellent Sauce, that they digeſt any thing.

To that I anſwer, That I have ſeen Gentlemen and Gentlewomen of that Country, of whom as much curioſity hath attended, as is liable to the City; nay, ſuch as have had ſickneſs their beſt familiar, yet eat of this with great and ſharp appetite, and when health was moſt to be feared, then to boaſt of moſt ſoundneſs. This *Waſhbrew* is to look upon like Painters Size, or new made Jelly, being nothing but the very heart of the Oat-meal, boyled and drained to that heighth and thickneſs, having neither Hull nor Bran in it, but the pure Meal and Water, and is to be eaten either with Wine, ſtrong Beer, or Ale, or with clarified Honey, according to mens ſtomachs and abilities. Now this the eaters thereof affirm, that by no means it muſt be chewed, but rather ſwallowed by the ſpoonful whole, becauſe chawing like a Pill makes it taſte unpleaſant. There is again another meat to be made of Oat-meal, which is called *Girt-brew*, and is ſomewhat more courſe, and leſs pleaſant than *Waſh-brew*, having both the bran and hulls in it, yet it is accounted a food of a very good ſtrength, and exceeding wholſome for mans body; and of my knowledg much uſed and much deſired of all labouring perſons that are acquainted with it: Many other foods there are to be made of Oat-meal, but theſe ſhall be at this time fully ſufficient.

Of Barley and the uſe.

The next Grain to this I account Barley, which may be every way uſed like unto Wheat, either to make Grewel, or to be creyed, parcht, or boyled; and for Barley for this purpoſe of food, the beſt is French Barley, the next is Barley-big, or bear-Barley, and the worſt are the ſpice or Battledore-Barley, and our common Engliſh Barley.

Buck and the uſe.

And as Barley or Wheat, ſo you may uſe your Buck, and your *Indian Siligo*, for they are of like nature, only they are a longer time in their beating, ſteeping, and boyling, becauſe they are naturally more hard and more dry, by reaſon of the heat of the Climate in which the beſt grow; and it is ever to be obſerved for a Rule, that the drier you keep your Corn at Sea, the better it is, and ſweeter, and longer laſting.

Now

Of Pulſe, and firſt of Beans. The uſe.

Now having ſhewed the uſe of theſe lighter grains, I will come to Pulſe, and ſhew their uſe and benefit at Sea, or in beſieged Towns: and of Pulſe, I will firſt ſpeak of Beans as a principal food, wholſome and ſtrong, and though not ſo fine and light of digeſtion as of any of the former, yet exceeding hearty and ſound, and a great breeder of good blood: They are for the moſt part to be boyled whole, till ſuch time as they appear ſoft and tender, or begin to break, and then drained from the water are ſerved in Trays, and well ſalted, and ſo eaten; a pottle whereof is thought a full proportion for four men: and of theſe Beans there are divers kinds, as the common Garden-bean, or the

The French-bean.

French-bean, which is great, broad and flat, and theſe are the beſt to boyl either with meat, or by themſelves, and ask the leaſt labour, becauſe their outer skin is moſt tender, and the inward ſubſtance moſt apt to be molified and ſoftned; they may alſo be boyled when they are young and green, and when they are old and dry, and the meat at both times is good and ſavory.

The Kidney-bean.

The next Bean to theſe are the Kidney-bean, which is flatter and leſſer, & nearer the proportion of a Kidney, than the French-bean is, and this is alſo a Garden-bean, and whilſt it is young and green is to be eaten Sallet-wiſe after they are boyled, both the Cod and Bean together, and it is certain, a better Sallet cannot be taſted; for the Cod or Husk is every way as excellent in taſte as the Bean is; but after they grow old and dry, and that the moiſture is gone out of the Cod, then it is meet to thraſh them, and boyl them like the French-bean, and they are every way as good meat, and as ſoon boyled, and as tender.

Common-field Beans, the uſe.

The next Bean to theſe are your common and ordinary field Beans, which having tough and hard skins ask more boyling than the other beans, and are ſomewhat harder in taſte, yet a good ſound food alſo; there be many that parch them in the fire, and think them then the beſt meat, becauſe the fire ſooner breaks the skin, and ſoftneth the kernel; becauſe they cannot be done ſo abundantly, and therefore are not ſo much in uſe.

Of Peaſe, and the uſe.

After this great ſort of Pulſe, I will now ſpeak of the ſmaller ſort, as Peaſe, and their like; and of Peaſe there are two kinds, the Garden-Peaſe, and the field-Peaſe, and for this uſe (albeit both are very good) yet the Garden-peaſe are beſt, for they are ſooneſt boyled

boyled and are moſt tender, and ſerve for moſt uſe, as for pottage, boyling, parching, ſpelting; and of theſe Garden peaſe, there are divers kinds, as white peaſe, French peaſe, Haſtings, Rounſivals, and ſuch like, the firſt being the longeſt laſters, the ſecond the pleaſanteſt in taſte, the third the earlieſt and tendereſt, and the laſt largeſt and fulleſt.

The field peaſe are only of two kinds, as the white peaſe and the gray peaſe; and they ſeldome make pottage, becauſe they are unapt to break, but are only for boyling and making of leap peaſe, or for parching, yet a good and a ſtrong food: and as we uſe peaſe, ſo in other countries they uſe Lupins, Lentils, Tares, Fetches, and ſuch like ſmaller pulſe, but they are neither ſo good, wholeſome, nor ſavoury in taſte, being a kind of grain more rank, fulſome, and breeding of ill blood and infection within: theſe in caſes of Sea-fare and war-fare, ought principally to be eſchewed and ſhunned. Several ſorts of Garden-peaſe.

Now it reſteth after this long digreſſion of theſe ſeverall grains, and their uſes, with the meats and profits which are made of them, that we come to the ſafe manner of keeping and preſerving them either by Land or Water, for Victual, or Tranſportation, ſo as they may laſt and indure without ill ſmell or rottenneſs.

And firſt for tranſportation of grain by Sea, it is two wayes to be done, as either in great quantities for trade and the victualling of other nations, or in ſmaller quantity for victualling the men in the Ship, prepared for a long and tedious voyage. Grain for trade.

For the tranſporting of Grain for trade in great quantities, it is to be intended the voyage is ſeldome long, but from neighbour to neighbour, and therefore commonly they make cloſe decks in the ſhips to receive the grain, fair and even boarded, yet if ſuch decks be matted and lined, both under, and on each ſide; it is much the better; and this matting would be ſtrong and thin. There be ſome which make the decks only of mats, and ſure it is ſweet, but not ſo ſtrong as the boards: therefore the beſt way of tranſportation, is, to have ſtrong boarded decks well matted; and then ſpreading the Corn of a reaſonable thickneſs, to cover it with matting again, and then to lay corn on it again, and then mats again, that between every reaſonable thickneſs of To tranſport Grain for Trade.

Grain a mat may lye; the profit whereof is, that when the Corn with his own heat, and the working of the Sea ſhall begin to ſweat, which ſweat, for want of air to dry it up, would turn to putrefaction.

Then theſe mats thus lying between, will not onely exhale and ſuck up the ſweat, but alſo keep the Corn ſo cool and dry, that no imperfection ſhall come unto it. And here is to be noted, That theſe mats ſhould rather be made of dry white bents, then of flags and bulruſh; for the bent is a firm, dry, criſp thing, and will not relent or ſweat of it ſelf, but the flag or bulruſh is a ſpungy and ſoft ſubſtance, which is never empty of its own and other moyſtures.

Tranſporting of Victuals.

Now for tranſporting of Grains, for Victuals for the Ship, which is in much ſmaller quantity, becauſe it is but for the private uſe of a few within the ſhip; the onely beſt and ſafeſt way, is, to take Salt-fiſh barrels, or any Cask in which any Salt fiſt hath been piled, as Cod, Herrings, Salmon, Sprats, or any other powdred Fiſh; and whilſt the veſſels are ſweet, you ſhall chalk them both within and without with plaiſter, daubing them all over, then into them put your Grain of what kind ſoever it be, and head them up cloſe, and then ſtow them in ſuch convenient dry place of the ſhip, as you ſhall think fit, and queſtionleſs if belief may be given to the worthieſt Authors which have writ in this kind, you may thus keep your Grain ſweet, ſound, and in full perfection from one year to an hundred and twenty years; but certainly daily experience ſhews us, that all kind of Grain thus put up and kept, will remain ſound and ſweet, three, four, and as ſome ſay, ſeven years, for ſo far hath lately been try'd: and what here I ſpeak of ſhip-board, the like may be done in any Town of War or Garriſon, whether beſieged, or not beſieged, or in any other place, where any neceſſity ſhall compel; the proof of this manner of pilling or puting up of Grain, ſerveth as well for Land as Sea.

CHAP.

CHAP. XX.

The Inriching of all manner of barren Grounds, and to make it fruitfull to bear Hopps.

THe Hop of all plants is the moſt tender, and can endure neither too rich a ground, nor yet too poor: for being planted in the firſt, it bringeth forth only leaves and no bells, and in the latter yieldeth neither leaves nor bells.

Abating fertility.

Now in the firſt ſort of Ground, which is fertile and rich, I have nothing to do but only to adviſe how you may allay and leſſen that too much fatneſs, by mixing your hills well with Chalk, or ſmall ſharp Gravel, if it be a haſſel or mix'd mould; and with good ſtore of red ſand if it be a ſtiff clay, for either of theſe mixtures will in ſhort ſpace abate any fertility.

Increaſing of fertility.

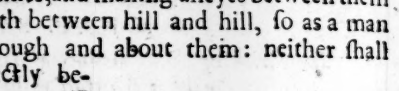
But if the ſoyl be contrary to this, that is, extream barren, then you ſhall ſeek by theſe means following to increaſe the fertility. Firſt, when you have taken a view of that barren earth, which you intend to convert to a Hop-garden; you ſhall firſt look to the ſituation thereof, whether it lye high or low, whether it be ſubject to inundations or drownings, or that it lye ſafe and free from any ſuch annoyance: If it be ſubject to great and deep over-flowes, then it is no ground for this purpoſe; but if it be onely lyable but to ſome ſmall waſhings, then you may by a few ſmall drains and ſewers caſt through your alleys, convey away the water to ſome lower grounds, ſo as it may not continue long in the Gardens to do hurt. Beſides, for a further ſafety to the Hop, you ſhall make your hills a great deal bigger and higher, that when any over-flow ſhall happen, the water may not reach above the mid-part of the hill at the moſt, for the root may endure moiſtning, but not drowning; and this water thus running through the alleyes, and not drowning the root, will bring to the ground very much fertility. But howſoever, after you have eas'd your ground of theſe particular faults, yet the general fault, which is barrenneſs, will remain ſtill: therefore, having plotted out your Garden, and fenced it ſufficiently about, you ſhall then caſt up your hills about *Michaelmas*, placing

Choice of Earth.

Draining water.

Caſting of hills and allies.

them in a very orderly manner, and making alleyes between them of four or five foot breadth between hill and hill, ſo as a man may walk at pleaſure through and about them: neither ſhall theſe hills ſtand all directly behind one another, for ſo one will overſhade another, which is an annoyance, but according to this Figure, where there is a largeneſs of ſpace, and a by-paſſage, through which the Sun may come to give comfort to every Plant.



Theſe hills, if the ground be free from water, may be raiſed about two foot, or a foot and a half high, and of a compaſs anſwerable to the heighth; neither ſo little, that the hill may be ſharp like a Sugar-loaf, nor yet ſo big, that the hill may lye flat, and ſo retain and hold any rain or wet, which ſhall fall upon it; but you ſhall keep a due middle proportion, making the hill convenient for your Plants and poles, and ſo as it may ſhoot or put off any wet, or other annoyance, which ſhall fall upon it.

The compoſition of the enriching of hills.

Now theſe hills you ſhall not make intirely, all of one mould, but you ſhall take, as it were, a third part or better thereof, then another part of the earth which lyeth under dung-hills, and the laſt part of Sope-aſhes; and theſe three bodyes you ſhall mix equally together, and of them compound your Hop-hills: but if this ſeem ſomewhat difficult, and that you cannot find enough for your purpoſe of either of theſe manures, then you may take three parts of the natural earth, and but onely a fourth part of the other two, and therefore mix your Hop-hills, and it will be ſufficient to afford you profit enough, provided you be able once in three or four years to renew it, for ſo long this will laſt in full ſtrength and power.

Preparing of the allies.

When you have thus made up your hills, you ſhall then pare up with a paring ſhovel all the green ſwarth quite through all your allyes at leaſt four fingers thick, and with the ſwarth ſo pared up, you ſhall cover all your hills almoſt to the top, turning the green ſwarth next unto the earth, ſo as it may rot, for that is an excellent manure alſo: then when your allyes are all

thus

thus cleanſed of their ſwarth, you ſhall take good ſtore of braken, or fern, and ſtrow it all over quite thorow all the allies, ſo that it may lye in a good thickneſs, almoſt to the midſt of the hills, which having all the Winter to rot in, will not only be an exceeding comfort to the hills, and preſerve both them and their plants from many evils, but alſo being ſhovelled up together with the earth in the ſpring time, will be a marvellous ſtrong manure wherewith to repleniſh the hills, and to make them to proſper exceedingly, and to ſave much other coſt and charges as well in manure as in carriage.

The Planting of Hopps.

When your hills are thus inriched, and your allies thus prepared, you ſhall then open your hills in the top, and ſet your plants, that is to ſay, in every hill four plants at the leaſt, being well prepared; and this ſhould be done in the month of *October*, and theſe plants muſt be ſet good and deep in the earth, and covered all over at the leaſt four fingers thick: and if with the earth which covereth theſe plants you mix Ox-blood and Lime, it will not onely give great comfort and nouriſhment to the Plants, but alſo defend and ſave the roots from worms and other vermines, which otherwiſe would ſeek to deſtroy them.

Poling of Hopps.

After your Garden is thus planted over, you ſhall then let it reſt till the following Spring, and about *April*, finding the ſmall Twines of your Hopps iſſued out of the Hills and running alongſt the ground, you ſhall then ſet up your Poles, which Poles, ſo they be long and ſtreight, may be of any wood you pleaſe, as either Aſh, Elme, Withy, Willow, or Sallow, and in the ſetting up of theſe poles, you ſhall have two very carefull reſpects: Firſt, that in putting in of the poles, and faſtening them with the earth, you do not hurt the Hop roots, which a ſmall careleſneſs may do, but be ſure to ſet them cleer at the roots; and that you may do it the better, and make your poles to ſtand the faſter, it is good that you have an iron auger, there with firſt to pierce the ground, and then to put the pole after, and ſo ram it in hard that it may not ſtir. The ſecond care is, that you place not one pole to overſhadow another, but that they may ſtand ſo clear one from another, that which way ſoever the Sun ſhall caſt his beames, yet every plant (as it winds about the

the pole) may be an equall partaker of the ſame.

This, with a ſmall obſervation in the ſetting up of the poles may eaſily be performed: the number of poles that you ſhall ſet on every hill, muſt be anſwerable to the Syens which ſhall iſſue from the roots, allowing to every pole two Syens at the leaſt, and not above three at the moſt: theſe Syens (when your hills are poled) you ſhall with your hands twine about their ſeveral poles, and thoſe which are but new peeping from the ground, you ſhall ſo fold among the other Branches, as they may of themſelves run about the pole; and as theſe, ſo alſo all the other twigs, which are any way derived from the main Sien, leaving not any at all to run upon the ground; for that is altogether profitleſs, and to no uſe.

Of weeding Hops.

For the weeding of this barren earth thus made into an Hop-Garden, there is little care to be had: for firſt, the ſoap aſhes wherewith the hills are manured, the Ox blood and the Lime, are ſuch enemies to all manner of weeds, that they will not ſuffer any to grow where they abide; Next, the Braken and Fern, which covereth the alleyes, is ſuch a poyſoner and ſmotherer of any thing that ſhall grow underneath it, that it will not ſuffer any weed to peep or ſpring up through it; yet if in any eſpecial place, where neither of theſe defences come, it happen that any weeds do grow, then you ſhall with your beſt care cut them away, or pull them up, and ſo your Garden ſhall remain comely, pleaſant and fruitfull to every proſpect.

CHAP. XXI.

A generall computation of men, and Cattels labours: what each may do without hurt daily.

Plowing and Sowing.

TO ſpeak generally of all Husbandly works, where the Country is tolerable, without any extraordinary difficulty, you ſhall underſtand, that a man may well in ſtiffe grounds, plow an Acre, or an Acre and a half, and in light ſand grounds two or three Acres with one Team in a day, and he may plough and ſowe in ſtiff ground two Acres and an half each day, and in light ground four at leaſt with one Team; and alwayes what he ſoweth, that he may harrow the ſame day alſo.

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A man may well mow of good and deep loggy meadow, or of rough, uneven meadow, every day one acre; mowing clean and making a ſmooth board of well ſtanding and good ſmooth meadow, an acre and a half each day: and of very thin and ſhort graſs, or upland meadow, two acres at the leaſt leaſt every day.

Alſo, he may mow of Corn, as Barley and Oats, if it be thick, loggy, and beaten down to the earth, making fair work, and not cutting off the heads of the ears, and leaving the ſtraw ſtill growing one acre and a half in a day: but if it be good, thick, and fair ſtanding corn, then he may mow two acres, or two acres and half in a day; but if the corn be ſhort, and thin, then he may mow three, and ſometimes four Acres in a day, and not be over-laboured: Alſo of beans he may mow as much, and of peaſe mixt with beans, having a hook to follow him, no leſs; for they are works in this nature moſt eaſie, and leaſt troubleſome. Mowing.

One man with a Binder may well reap an Acre of Wheat or Rye in a day, if it be principal good and well ſtanding, but if laid or beaten down with weather, then three rood is fully ſufficient for a dayes labour; but if it be thin and upright ſtanding, then he may reap and bind five roods in a day: Of ſmall peaſe, Fetches, and ſuch like, a man may well reap two acres every day. Reaping.

Now foraſmuch as it is a cuſtom in divers Countries (and truly it is exceeding profitable and worthy imitation) to ſheaf and bind up both Barley and Oats, as well as Wheat or Rye, and that both ſaveth much Corn, and alſo makes it take a great deal leſs room, and that this labour is to be done after the mowers, as the other was after the reapers, by gathering the Barley, or Oats up without a ſickle or hook, as it lyes in the ſwath, and ſo binding it in ſheafs, you ſhall underſtand, that one man in a day ſhall bind as much as one mower can mow; and if the man be any thing skilful in the labour, two binders will bind as much as three mowers can mow. Binding of Barley and Oats.

For the gathering or inning of Grain, no man can proportion the number of loads, or quantity of ground, ſhall daily be brought home, ſith the journeyes are uncertain, ſome going Gathering in of Grain.

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a mile, ſome half a mile, and ſome two mile: therefore it is the Husbandmans beſt way, the firſt day to go with his Team himſelf, and both to obſerve the labour and diſtance of place, and by that to compute what may be done after, without hurt to his cattel, and where he fails of any hope, there to make a ſtrict account of the errour; for it is either ignorance or careleſneſs which brings forth miſchances, ſpeaking of husbandry, as over-throwing the Team, over-loading the Team, breaking neceſſary inſtruments, or not reſpecting the wayes and paſſages; any of which may in a day hinder more then half a dayes labour.

Ditching. Again, a man may in a day ditch and quickſet of a reaſonable ditch four foot broad, and three foot deep, a rod or a pole a day; allowing ſixteen feet to the rod, and ſo of large meaſure leſs ground, and of leſs ground larger meaſure according to the ſufficiency of the fence which you purpoſe to make.

Hedging. A man may hedge alſo in a day, if the hedge be good and ſubſtantial, that is to ſay, five foot high, well bound, thick ſtackt, and cloſe laid, two rod in a day; and if the work be lower or thinner, then double ſo much more according to the former proportion.

Plaſhing. For this plaſhing of hedges, or making a quick fence, if he do it workmanly, and that the growth be high and well grown, and then he lay it thick, cloſe, and ſtrongly bound in the top, turning the quick downward and inward, to plaſh a rod a day, is as much as any man can well do: but if he plaſh it after the weſt-country faſhion, that is, onely cutting it down, and laying it along cloſe to the ground, ſeeking only thickneſs, and not much guard or comlineſs, then he may well plaſh a rod and a half a day without trouble: And ſure in this work is great care and art to be uſed, as well for the preſervation of the quick, as the goodneſs of the fence, being a thing of worth and validity to every Husbandman.

Delving. Again, a man may delve or dig, as for Garden mould, Hemp-yard, Flax-yard, or for the ſetting of corn, or for levelling of uneven places, one rod in a day, and the ground ſo digged and delved, he may rake, dreſs, and level in the ſame day alſo: but if he dig it deep, and trench it, and manure it, as is meet, either

ther for Garden, Orchard, or Corn-ſetting, then to delve half a rood in a day, is a very great proportion, becauſe ordinarily to delve, as to receive ordinary Seeds, requires but one ſpade graft in depth; but extraordinarily to delve, as for enriching and bettering of the ground, and to cleanſe it from ſtones, weeds, and other annoyances, will require two ſpades graft at the leaſt.

Thraſhing. Laſtly, a man may thraſh if the Corn be good and clean, without ſome extraordinary abuſe or poverty in the grain, in one day four Buſhels of Wheat or Rye, ſix buſhels of Barley or Oats, and five buſhels of Beans or Peaſe: but then the Pulſe muſt be imagined to be exceeding good, otherwiſe a man ſhall thraſh leſs of it, than of any other kind of Grain; for as when it is well loaden, it yieldeth plentifully, ſo when it is poor and lightly loaden, it yieldeth little or nothing, and yet hath not one ſtroke leſs of the flail, nor any labour ſaved, more than belongs to the beſt pulſe whatſoever, being ever at leaſt three times turned, and four times beaten over.

The particular expence of a day. Having thus generally run over (in a ſhort computation) the labours of the Husbandman, I will now briefly as I can, go over the particular days labour of a Farmer or Plow-man, ſhewing the particular expence of every hour in the day, from his firſt riſing, till his going to bed, as thus for example: we will ſuppoſe it to be after *Chriſtmas*, and about plow-day (which is the firſt ſetting out of the Plow) and at what time men either begin to fallow, or to break up Peaſe-earth, which is to lie to bait, according to the cuſtom of the Country; at this time the Plow-man ſhall riſe before four of the Clock in the morning, & after thanks given to God for his reſt, and prayer for the ſucceſs of his labours, he ſhall go into his ſtable, or beaſt-houſe, and firſt he ſhall fodder his Cattle, then cleanſe the houſe, and make the booths clean, rub down the Cattle, and cleanſe their skins from all filth; then he ſhall curry his Horſes, rub them with cloaths and wiſps, and make both them and the ſtable as clean as may be; then he ſhall water both his Oxen and Horſes, & houſing them again, give them more fodder, & to his Horſe by all means Provender; as Chaff, and dry Peaſe or Beans, or Oat-huls, Peaſe or Peans, or clean Oats, or clean Garbadge (which is the hinder ends of any Grain but Rye) with the ſtraw chopt ſmall amongſt it, accord-

ding as the ability of the Husbandman is.

And whilſt they are eating their meat, he ſhall make ready his Collers, Hames, Treates, Halters, Mullens, and Plowgeares, ſeeing every thing fit, and in his due place, and to thaſe labours I will alſo allow full two hours, that is, from four of the clock till ſix; then he ſhall come in to breakfaſt, and to that I allow him half an hour, and then another half hour to the gearing and yoaking of his Cattle, ſo that at ſeven of the clock he may ſet forward to his labour, and then he ſhall plough from ſeven of the Clock in the morning, till betwixt two and three in the afternoon; then he ſhall unyoke and bring home his Cattle, and having rubb'd them, dreſt them and cleanſed away all dirt and filth, he ſhall fodder them, and give them meat; then ſhall the ſervants go in to their dinner, which allowed half an hour, it will then be towards four of the clock, at which time he ſhall go to his Cattle again, and rubbing them down, and cleanſing their ſtalls, give them more fodder: which done, he ſhall go into the Barn, and provide and make ready fodder of all kinds for the next day, whether it be hay, ſtraw, or blend-fodder, according to the ability of the Husbandman.

This being done, and carried into the ſtable, Oxe-houſe, or other convenient place, he ſhall then go water his Cattle, and give them more meat, and to his Horſe-Provender, as before is ſhewed: and by this time it will draw paſt ſix of the Clock, at which time he ſhall come in to ſupper, and after ſupper, he ſhall either by the fire ſide mend his ſhooes both for himſelf and their Family, or beat, or knock Hemp, or Flax, or pick and ſtamp Apples or Crabs, for Cyder or Verjuyce, or elſe grind Malt on the Quernes, pick Candle-ruſhes, or do ſome Husbandly office within doors till it be full eight a Clock: Then ſhall he take his Lanthorn and Candle, and go ſee his Cattle, and having cleanſed the ſtall and planks, litter them down; look that they be ſafely tied, and then fodder, and give them meat for all night; then giving God thanks for benefits received that day, let him and the whole houſhold go to their reſt till the next morning.

Now it is to be intended, that there may be in the Houſe-

hold

hold more ſervants than one : and ſo you will demand of me what the reſt of the ſervants ſhall be imployed in, before and after the time of plowing. To this I anſwer, that they may either go into the Barn and thraſh, fill or empty the Malt fit, load or unload the Kilne, or any other good and neceſſary work that is about the yard ; and after they come from plowing, ſome may go into the Barn and thraſh, ſome hedge, ditch, ſtop gaps in broken Fences, dig in the Orchard or Garden, or any other Out-work, which is needful to be done, and which about the Husbandman is never wanting, eſpecially one muſt have a care every night to look to the mending or ſharpening of the Plough-irons, and the repairing of the Plough and Plough-gears, if any be out of order ; for to defer them till the morrow, were the loſs of a days work, and an ill point of Husbandry.

Particular labours of Cattle.

Now for the particular labours of Cattle, though it be already inclusively ſpoken of in that which is gone before, where I ſhew you how much a man may conveniently plough in a day with one Team or Draught of Cattle, yet for further ſatisfaction, you ſhall underſtand, that in your Cattle there are many things to be obſerved, as the kind, the number, and the Soil they labour in. For the kind, which are Oxen, Bulls, or Horſes ; the beſt for the draught are Oxen, and the reaſon I have ſhewed in my former Works : The next are Horſes, and the worſt, Bul's, becauſe they are moſt troubleſome : the number fit for the Plough, is eight, ſix or four ; for the Cart, five or four ; and for the Waine, never under ſix, except in leading home of Harveſt, where loading eaſily, four very good Oxen are ſufficient ; for the Soil, if it be in the tougheſt and deepeſt earth, eight Beaſts can do no more but fallow or break up Peaſe earth ; no, nor fewer ſtir, if the ſeaſon grow hard and dry ; for ſoyling, Winter rigging and Seed furrow, ſix Beaſts may diſpatch that labour : if the Soil be mix'd and haſſel, then ſix may fallow and ſowe Peaſe, and four do every other ordure : but if it be light and eaſie Sand, then four is enough in every ſeaſon. For the quantity of their work, an Oxe-plough may not do ſo much as a Horſe-plough, becauſe they arenot ſo ſwift, nor may be driven out of their pace, be-

ing more apt to surfeit than Horses be, so that for an Ox-plough to do an Acre, and an Horse-plow an Acre and a Rood, or an Acre and a half in good ground, is work fully sufficient.

CHAP. XXII.

The applying of Husbandry to the several Counties of this Kingdom, wherein is shewed the Office and Duty of the Carter or Plow-man.

IT is to be understood, that Husbandry doth vary according to the Nature and Climates of Countries: not one rule observed in all places, but according as the Earth, the Air, the much or little heat, moisture or cold doth increase or diminish, so must the skilful Husbandman alter his seasons, labours and instruments; for in stiff Clays, as are all the fruitful Vales of this Kingdom (of which I have named most part in a Chapter before) as also *Huntington-shire*, *Bedford-shire*, *Cambridge-shire*, and many other of like nature; all manner of arable work must be begun betimes in the year, and the Ploughs and Instruments must be of large size, and strong timber, and the labour great and painful: so also in mixt soils, that are good and fruitful, as *Northampton-shire*, *Hartford-shire*, most part of *Kent*, *Essex*, *Bark-shire*, and Counties of like nature; all arable toils would begin at latter seasons, and the Ploughs and Instruments would be of middle size, and indifferent timbers, and the labour somewhat less than the other; but the light sandy grounds which have also a certain natural fruitfulness in them; as in *Norfolk*, *Suffolk*, most part of *Lincoln-shire*, *Hampshire*, *Surry*, and Counties of that nature, all arable toils would begin at the latest seasons, and the Ploughs and Instruments would be of the smallest and lightest size, and of the least timber, and the labour of all the other is easiest.

Lastly, for the barren unfruitful earth (of which only I have written in this Case as in *Devonshire*, *Cornwal*, many parts of *Wales*, *Darbyshire*, *Lancashire*, *Cheshire*, *Yorkshire*, and many other like, or worse than they: the arable toils would have a fit season of the year, according to the temperateness of the year, which if it happen early, then you must begin your labours at latter

ter ſeaſon, and for your Plough and Inſtruments, they muſt not keep any certain proportion, but be framed ever according to the ground, the ſtronger and ſtiffer ground having ever the ſtrong and large Plough, with Inſtruments of like kind, and the lighter earth a Plow and Inſtruments of more eaſie ſubſtance: as for the labour, it muſt be ſuch, and no other, than that which hath been already declared in this Book.

And hence it comes, that the office and duty of every skilful Plow-man, or Carter, is, firſt to look to the nature of the earth, next to the ſeaſons of the year, then to the cuſtoms and faſhions of the place wherein he liveth; which cuſtoms, although they be held as ſecond natures amongſt us, and that the beſt reaſons of the beſt work-men commonly are, that thus I do, becauſe thus they do; yet would I wiſh no man to bind himſelf more ſtrictly to cuſtom, than the diſcourſe of reaſon ſhall be his warrant, and as I would not have him to prejudicate in his own opinion, ſo I would not have him too great a ſlave to other mens tradition, but ſtanding upon the ground of reaſon, made good by experience, I would ever have him profit in his own judgment.

Now the further office and duty of the Husbandman, is, with great care and diligence, to reſpect in what ſort faſhion to plough his ground: for although I have in the former Chapter ſhewed how he ſhould lay his furrows, what depth he ſhall plow them, and how he ſhall be able to raiſe and gain the greateſt ſtore of mould; yet is there alſo another conſideration to be had, no leſs profitable to the Husbandman than any of the former; and that is, how to lay your Land beſt for your own profit and eaſe, as alſo the eaſe of your Cattle which ſhall draw within your draught, as thus for inſtance: If your arable Land ſhall lie againſt the ſide of any ſteep hill (as for the moſt part all barren earths do) if then you ſhall plow ſuch Land directly againſt the hill, beginning below, and ſo aſcending ſtreight upright, and ſo down again, and up again, this very labour and toyling againſt the hill will breed ſuch a bitter wearineſs to the cattle, and ſuch a diſcouragement, that you ſhall not be able to compaſs one half part of your labour, beſides the danger of over-heating and ſurfeiting of your beaſts, whence will ſpring many

The Carter's office.

many mortal diſeaſes: Therefore when you ſhall plough any ſuch ground, be ſure to plough it ſide-ways over-thwart the hill, where your Beaſts may tread on the level ground, and never directly up and down, ſo ſhall the Compoſt and Manure which you lay upon the ground not be ſo ſoon waſh'd away from the upper-part of the ground, becauſe the furrows not lying ſtreight down in an even deſcent, but turned croſs-ways upward againſt the hill, it muſt neceſſarily hold the Soil within it, and not let it waſh away.

Of Cattle for draught.

Again, it is the office of every good Plow-man to know what Cattle are meeteſt for his draught, as whether Oxen or Horſe, or both Oxen and Horſe: wherein is to be underſtood, that although of all draughts whatſoever within this Kingdom, there is none ſo good to plough withal, both in reſpect of the ſtrength, ſtability, indurance, and fitneſs for labour, as the Oxen are, in whom there is ſeldom or never any loſs; becauſe whenſoever his ſervice faileth in the draught, his fleſh will be of good price in the ſhambles; yet notwithſtanding in this caſe a man muſt neceſſarily bind himſelf much to the cuſtom of the Country, and faſhion of his neighbours; for if you ſhall live in a place where fuel is ſcarce and far to be fetch'd, as commonly it is in all barren Countries, which for the moſt part are ſtony Champains, or cold Mountains; and your Neighbours, as well for the ſpeed of their Journeys, as for length, keep Horſe-draughts; in this caſe alſo you muſt do the like, or elſe you ſhall want their company in your Journey, which is both diſcomfort and diſprofit, if any miſchance or caſualty ſhall happen; or being inforc'd to drive your Oxen as faſt as they do their Horſe, you ſhall not only over-heat, tire, bruiſe, and ſpoil them, but alſo make them utterly unfit either for feeding or labour; and therefore if your Eſtate be mean, and that you have no more but what neceſſity requires, then you ſhall ſort your Plow or Team according to the faſhion of your Country, and the uſe of your neighbours: but if God have bleſt you with plenty, then it ſhall not be amiſs for you to have ever an Oxe-draught or two to till your Land; and a Horſe-draught to do all your forraign abroad buſineſſes: ſo ſhall your work at home ever go conſtantly forward, and your outward neceſſary Proviſions be never wanting. Now

for

for the mixture of Oxen and Horſes together, it falleth out oftentimes that the Plow-man of force muſt be provided with Cattle of both kind, as if he happen to live in a rocky Country, where the ſteepneſs of the Hills, and narrowneſs of the ways, will neither ſuffer Cart, Wain, nor Tumbrel to paſs; in this caſe you ſhall keep Oxen for the Plow to till the ground with, and Horſes to carry pots and hooks: the firſt to carry forth your manure, and the other to bring home your Hay and Corn-harveſt, your fuel and other proviſions, which are needful for your family, as they do both in *Cornwal*, and other mountainous Countries, where Carts and Wains, and ſuch like draught, have no poſſible paſſage.

Again, it is the office and duty of every good Plow-man to know his ſeveral labours, for every ſeveral month through the whole year, whereby no day nor hour may be miſpent, but every time and ſeaſon employed according as his nature requireth: as thus for example.

In the Month of *January*, the painful Plow-man, if he live in fertile and good Soyls, as among rich, ſimple Clays, he ſhall firſt plow up his Peaſe earth, becauſe it muſt lie to take bait before it be ſown; but if he live in fruitful, well mixt Soyls, then in this month he ſhall begin to fallow the field he will lay to reſt the year following: but if he live upon hard barren earths (of which chiefly I write) then in this month he ſhall water his meadows & paſture grounds, and he ſhall drain and make dry his arable grounds, eſpecially where he intends to ſowe Peaſe, Oats, or Barley the Seed-time following. Alſo he ſhall ſtub up all ſuch rough grounds, as he intends to ſowe the year following. You ſhall meaſure and trim up your Garden moulds, and you ſhall comfort with manure, ſand, or lime, or all three mixt together, the Roots of all barren Fruit-trees; and alſo cut down all ſuch Timber, only there will be loſs in the Bark, for the time is ſomewhat too early for it to riſe. Laſtly, you may tranſplant all maaner of Fruit-trees, the weather being open, and the ground eaſie; you may rear Calves, remove Bees, and for your own health keep your body warm, let good diet and wholeſome be your Phyſitian, and rather with exerciſe than ſawce encreaſe your appetite. *January.*

In

February. In the month of *February*, either ſet or ſowe all ſorts of Beans, Peaſe, and other Pulſe, and the ſtiffer your ground is, the ſooner begin your work; prepare your Garden-mould, and make it eaſie and tender; prune and trim all ſorts of Fruit-trees, from moſs, cankers, and all ſuperfluous branches; plaſh your hedges, and lay your quick-ſets cloſe and intire together; plant Roſes, Gooſeberries, and any fruit that grows upon little buſhes; graft at the latter end of this month upon young and tender ſtocks, but by all means overlade not the ſtocks.

Laſtly, for your health, take heed of cold, forbear meats that are ſlimy and phlegmatick, and if need require, either purge, bathe, or bleed, as Art ſhall direct you.

March. In the month of *March*, make an end of ſowing of all ſorts of ſmall Pulſe, and begin to ſowe Oats, Barley, and Rye, which is called *March*-Rye; graft all ſorts of Fruit-trees, and with young Plants and Syens repleniſh your Nurſery; cover the roots of all trees that are bared, and with fat earth lay them cloſe and warm: if any Tree do grow barren, bore holes in the Root, and drive hard wedges or pins of Oak-wood therein, and that will bring fruitfulneſs; tranſplant all ſorts of Summer-flowers, and give new comfort of manure and earth to all early Out-landiſh flowers, eſpecially to the *Crown Emperial Tulips*, *Hyacinth*, and *Narciſſus* of all ſhapes and colours; cut down under-wood for fuel and fencing, and look well to your Ewes, for then is the principal time of yeaning.

And laſtly, bathe often, and bleed but upon extremity, purge not without good counſel, and let your diet be cool and temperate.

April. In the month of *April*, finiſh up all your Barley-ſeed, and begin to ſowe your Hemp and Flax: ſowe your Garden-ſeeds, and plant all ſorts of Herbs; finiſh grafting in the ſtock, but begin your principal inoculation, for then the Rind is moſt pliant and gentle; open your Hives, and give Bees free liberty, and leave to ſuccour them with food, and let them labour for their living.

Now cut down all great Oak-timber, for now the bark will riſe, and be in ſeaſon for the Tanners; now ſcour your ditches, and gather ſuch manure as you make in the ſtreets and high-ways, into great heaps together; lay your meadows, ſleight your corn-

corn-ground, gather away ſtones, repair your high-wayes, Set Oziers and Willows, and caſt up the banks and mines of all decayed fences.

Laſtly, for your health, either purge, bathe, or bleed, as you ſhall have occaſion, and uſe all wholeſome recreation: for than moderate exerciſe in this month, there is no better Phyſick.

In the month of *May*, ſow Barley upon all light ſands and burning grounds, ſo likewiſe do your Hemp, or Flax, and alſo all ſorts of tender garden ſeeds, as are Cucumbers, and Mellons, and all kind of ſweet ſmelling herbs and flowers; Fallow your ſtiff clayes, ſummer ſtir your mixt earth, and ſoyl all light and looſe hot ſands; prepare all barren earth for Wheat and Rye, burn bait, ſtub Gorſe or Furs, and root out Broom and Fern; begin to fold your ſheep, lead forth manure, and bring home fuell and fencing; weed your winter corn, follow your common works, and put all ſorts of graſs either in paſture or teather; put your Mares to the Horſe, let nothing be wanting to furniſh the Dairy; and now put off all your Winter fed Cattel, for now they are ſcarceſt and deareſt; put young ſtears and dry kine now to feed at freſh graſs, and away with all peaſe-fed ſheep; for the ſweetneſs of graſs mutton will pull down their prices. May.

Laſtly, for your health, uſe drink that will cool and purge the blood, and all other ſuch phyſical precepts, as true Art ſhall preſcribe you: but beware of Mountebanks, and old wives tales, the latter hath no ground, and the other no truth, but apparent couſenage.

In the month of *June*, carry ſand, marle, lime, and manure of what kind ſoever to your land; bring home your coals and other neceſſary fuel fetch far off; ſhear early fat ſheep, ſow all ſorts of tender herbs, cut rank low meadows, make the firſt return of your fat cattel, gather early ſummer fruits, diſtill all ſorts of plants and herbs whatſoever. June.

And laſtly, for your health, uſe much exerciſe, thin dyet, and chaſt thoughts.

In the month of *July*, apply your hay harveſt; for a day ſlackt is many pounds loſt; chiefly, when the weather is uncon- July.

ſtant, ſhear all manner of field-ſheep, Summer-ſtir rich ſtiff grounds, ſoyl all mixt earths, and latter ſoyl all looſe hot ſands. Let herbs you would preſerve, now run to ſeed; cut off the ſtalks of out-landiſh-flowers, and cover the roots with new earth, ſo well mixt with manure as may be; ſell all ſuch Lambs as you feed for the butcher, and ſtill lead forth ſand, marl, lime, and other manure; fence up your copſes, graze your elder under-woods, and bring home all your field-timber.

And laſtly, for your health, abſtain from all phyſick, bleed not but upon violent occaſion, and neither meddle with Wine, Women, nor no other wantonneſs.

Auguſt. In the Month of *Auguſt*, apply your Corn Harveſt, ſhear down your Wheat and Rye, mow your Barley and Oats, and make the ſecond return of your fat ſheep and cattle; gather all your Summer greater fruit, Plums, Apples, and Pears; in Summer make your ſweet Perry, and Cyder; Set ſlips, and ſyens of all ſorts of Gilly-flowers, and other flowers, and tranſplant them that were ſet the Spring before, and at the end of this month begin to winter-rig all fruitful ſoyls whatſoever, Geld your lambs, carry manure from your dove-coats, and put your ſwine to the early or firſt maſt. And laſtly, for your health, ſhun feaſts and banquets. Let Phyſick alone, hate wine, and onely take delight in drinks that are cool and temperate.

Semptember. In the month of *September*, reap your peaſe, beans, and all other pulſe, making a final end of your harveſt; now beſtow upon your wheat Land your principal manure, and now ſow your Wheat and Rye, both in rich and in barren climates; now put your ſwine to maſt, of all hands, gather your winter fruit, and make ſale of your wooll, and other ſummer commodities; now put off thoſe ſtocks of bees, you mean to ſell, or take for your own uſe, cloſe thatch and daub warm all the ſurviving hives, and look that no Drone, Mice, or other Vermine be in or about them; now thatch your ſtacks and reeks, thraſh your ſeed Rye and Wheat, and make an end with your cart of all forraign journeys.

Laſtly, for your health, in this month, uſe Phyſick, but moderately; forbear fruits that are too pleaſant or rotten, and, as death, ſhun ryot and ſurfeit.

In

In the month of *October*, finiſh your wheat-ſeed, and ſcour ditches and ponds, plaſh and lay hedges and quickſet, tranſplant, remove or Set all manner of fruit-trees, of what nature or quality ſoever; make your Winter Cider and Perry, ſpare your private paſtures, and eat up your corn-fields and Commons; and now make an end of winter ridging, draw furrows to drain, and keep dry your new ſown corn; follow hard the making of your malt, rear all ſuch calves as ſhall fall, and wean thoſe foals from your draught mares, which the Spring before were foaled: now ſell all ſuch ſheep as you will not winter, give over folding, and ſeparate Lambs from the Ewes, which you purpoſe to keep for your own ſtock. October.

Laſtly, for your health, refuſe not any needfull Phyſick at the hands of the learned Phyſitian, uſe all moderate ſports, for any thing now is good, which reviveth the ſpirits.

In the month of *November*, you may ſow either Wheat or Rye in exceeding hot ſoyls, you may then remove all ſorts of fruit-trees, and plant great trees either for ſhelter or ſhadow: now cut down all ſorts of Timber, for plows, carts, axeltrees, naves, harrows, and other husbandly offices; make now the laſt return of your graſs fed cattle, bring your ſwine from the maſt, and feed them for ſlaughter, rear what calves ſoever fall, and break up all ſuch Hemp and Flax, as you intend to ſpin in the winter ſeaſon. November.

Laſtly, for your health, eat good wholeſome and ſtrong meats, very well ſpiced and dreſt, free from rawneſs; drink ſweet wines, and for digeſtion ever before cheeſe, preſer good and moderate exerciſe.

In the Month of *December*, put your ſheep and ſwine to the peaſe Reeks, and fat them for the ſlaughter and market; now kill your ſmall porks, and large bacons, lop hedges and trees, ſaw out your timber for building, and lay it to ſeaſon; and if your land be exceeding ſtiff, and riſe up in an extraordinary furrow, then in this month begin to plow up that ground whereon you mean to ſow clean beans only; now cover your dainty fruit trees over with canvanſe, and hide all your beſt flowers from froſt and ſtormes, with rotten old horſe-litter; now drain all your corn-fields, and as occaſion ſhall ſerve, ſo water and keep moiſt December.

your meadows; now become the fowler, with Piece, Nets, and all manner of Engines, for in this month no fowl is out of season; now fish for the Carp, the Bream, Pike, Tench, Barbel, Peal and Salmon.

And lastly, for your health, eat meats that are hot and nourishing, drink good wine that is neat, sprightly and lusty, keep thy body well clad, and thy house warm, forsake whatsoever is flegmatick, and banish all care from thy heart, for nothing is more unwholesome then a troubled spirit.

Many other observations belong unto the office of our skilful Plow-man or Farmer; but since, they may be imagined too curious, too needless, or too tedious, I will stay my pen with these already rehearsed, and think to have written sufficiently, touching the application of grounds, and office of the Plow-man.

The End of Markham's *Farewell to Husbandry.*

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Put Garlick, Onions, or Leeks, into the mouths of the holes, and they will come out quickly, as amazed.

FINIS.